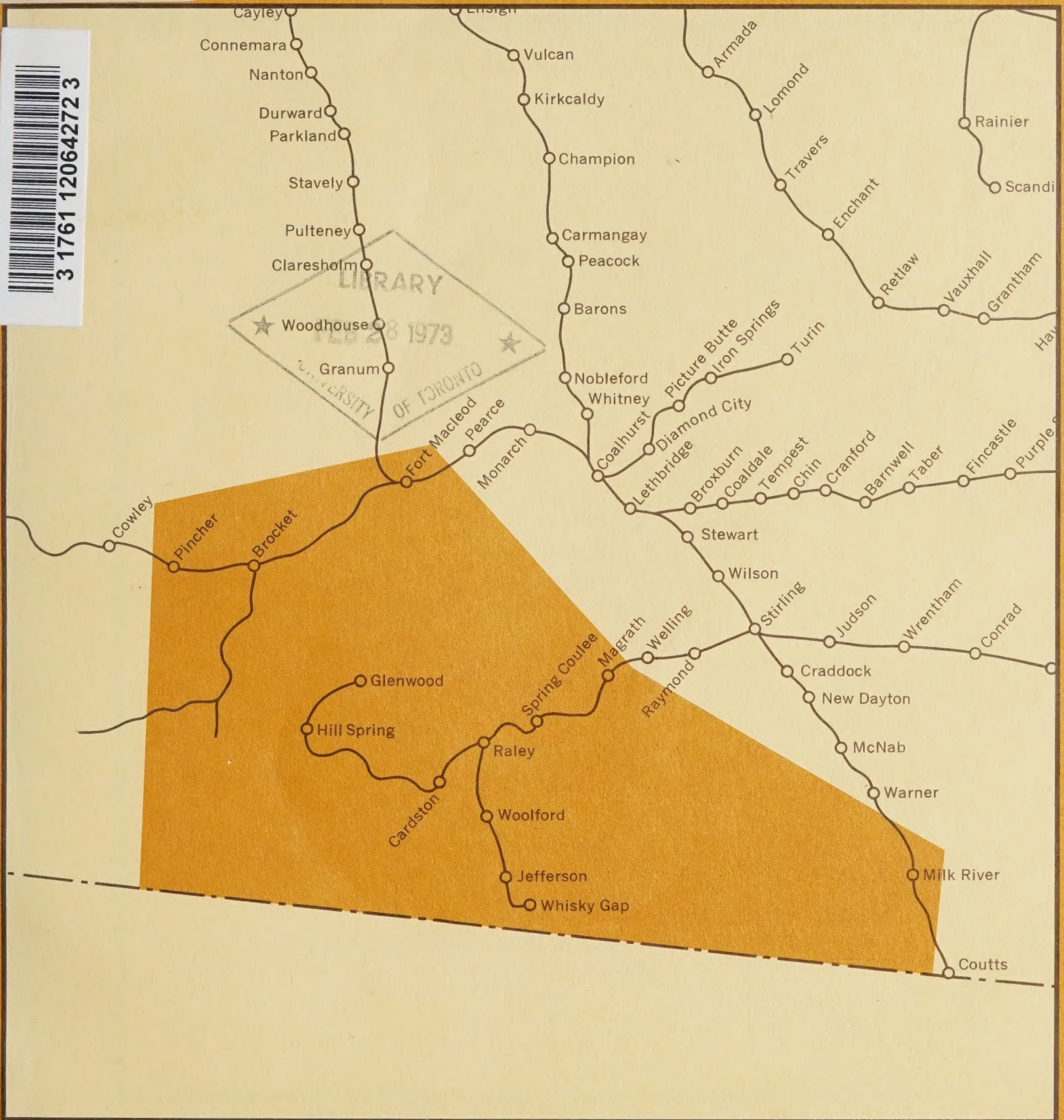


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CARDSTON REGION OF ALBERTA





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PRAIRIE REGIONAL STUDIES IN ECONOMIC GEOGRAPHY No. 9



THE CARDSTON REGION OF ALBERTA

J.W. CHANNON
K.J. MORISON

AGRICULTURE CANADA

ECONOMICS BRANCH PUBLICATION No. 72/3

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THE CARLETON REGION
OF ALBERTA



Publications in the Series of

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1. The Riverhurst Region of Saskatchewan by A.W. Burges, Geographical Branch, Department of Energy, Mines and Resources; and J.W. Channon, Economics Branch, Canada Department of Agriculture. (Supplement to Riverhurst Regional Report, September, 1967).
2. The Boissevain Region of Manitoba by J.W. Channon, D. Zasada and R.T. Miller, Economics Branch, Canada Department of Agriculture.
3. The Rockglen Region of Saskatchewan by J.W. Channon, D. Zasada and R.T. Miller, Economics Branch, Canada Department of Agriculture. Pub. No. 69/11. August, 1969.
4. The Camrose-Vegreville Region of Alberta by J.W. Channon and D. Zasada, Economics Branch, Canada Department of Agriculture. Pub. No. 69/16. November, 1969.
5. The Weyburn Region of Saskatchewan by J.W. Channon, H.R. Fast and D.A. Neil, Economics Branch, Canada Department of Agriculture. Pub. No. 71/4. May, 1971.
6. The Killarney Region of Manitoba by J.W. Channon, D. Zasada and K.J. Morison, Economics Branch, Canada Department of Agriculture. Pub. No. 71/7. November, 1971.
7. The Eston-Elrose Region of Saskatchewan by J.W. Channon, H.R. Fast and D.A. Neil, Economics Branch, Canada Department of Agriculture. Pub. No. 71/12. November, 1971.
8. The Brandon-Neepawa Region of Manitoba by J.W. Channon and K.J. Morison, Economics Branch, Canada Department of Agriculture. Pub. No. 71/15. July, 1972.
9. The Cardston Region of Alberta by J.W. Channon and K.J. Morison, Economics Branch, Agriculture Canada. Pub. No. 72/3. August, 1972.

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PREFACE

The series of reports published by Agriculture Canada under the general title of Prairie Regional Studies in Economic Geography originated from studies undertaken for the Minister of Agriculture in 1964, preparatory to the formation of the Branch Line Rationalization Authority. This body and the minister's direct responsibility for branch line abandonment never materialized, as bill C-120 failed to pass all stages in Parliament before the session in which it was introduced prorogued.

About the same time a wider-ranging study, not immediately concerned with branch line abandonment, was underway in the Department of Mines and Technical Surveys' Geographic Branch. Mr. A.W. Burges was the project leader for that study. Because the raw data were the same for both studies and the techniques used were also the same, a decision was made to merge the two projects. Thus, despite the transfer of authority for branch line rationalization from the Minister of Agriculture to the Minister of Transport, the work continued. A little later, in 1968, the Geographic Branch was reorganized and their work on the prairie railway network was discontinued. The Economics Branch of the Department of Agriculture then assumed the sole responsibility for the preparation and publishing of the series of reports known as the Prairie Regional Studies in Economic Geography. The present report covering the Cardston area of south-western Alberta is No. 9 in the series.

In all of the regional studies conducted thus far, the main thrust has been aimed at providing information on the socio-economic activity in each region, and on the grain farms and grain delivery points within the region. In making available the mass of detailed statistics, etc., it is hoped that people will gain an appreciation of the relative importance of the farms and communities there. With this background it is conceivable that those who would be directly involved in whatever changes may come about would be in a better position to assess the probable impact of changes in the infrastructure of the region.

As in other reports in the series, this one is organized into five parts, viz community characteristics; grain production characteristics; grain marketing characteristics; suggested alternative grain collection system; and a brief description of the legislation regulating the system. For added perspective a chronology of events having a bearing on grain has been appended.

An explanatory word about Part IV (suggested alternative) is perhaps necessary. Readers should bear in mind that the alternative presented has no official status whatsoever. Indeed, it is unlikely that the exact pattern of grain delivery points suggested will ever become the real life setup.

The Cardston region was originally delineated by searching for those points and those rail lines that present a problem in terms of low elevator through-put or low freight traffic density; in other words, uneconomic plant. An arbitrary line was drawn around these points and the points which would handle the traffic diverted

from the uneconomic plants. In the present case this comprised thirteen grain delivery points centred on Cardston and situated on the Cardston, Woolford, Crowsnest and Coutts subdivisions of Canadian Pacific Railway. After scanning the thirteen points, and possible alternatives, it was hypothesized that six of them might be closed for grain delivery purposes, and the grain that would have been delivered there would be diverted to the remaining seven points. The map presented in Part IV shows what the seven remaining hinterlands would look like under such circumstances, provided that those farmers delivering to the six centres would deliver to the nearest elevator still open after closure of the six. An approximation of what the region would look like under this sort of rationalization is all that is intended.

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PART I

COMMUNITY CHARACTERISTICS

Classification of Communities

A note in the preface has already indicated in a general way the method used to determine the boundaries of the study area and thus the group of communities to be examined. The classification, or stratification, of these communities presented a problem. Because the emphasis in this series of studies is on grain production, and marketing facilities, only those communities that are, or have recently been, official grain delivery points have been included. These are listed in Table 1.

Accordingly, all the communities within the area currently functioning as grain delivery points have been ranged in a hierarchy, grouped by the number of services available in these places. Raley and Whiskey Gap were considered to be too small for inclusion even in the category of hamlet, being elevator points with no other facilities. Hamlets were defined to be those places having from 3 to 9 services, and Jefferson, Woolford and Brocket were so classified. Those centres with from 10 to 35 services were designated as villages. Spring Coulee, Pincher Station, Hill Spring and Glenwood so qualified, in that order. Only one town, Magrath, appears in the study area, based on the definition of a town being a centre of 36 to 75 services. A group of communities each having more than 75 services but which are not generally accepted to be cities were categorized as greater towns. These are the centres of Milk River, Fort Macleod and Cardston, again in ascending order of the number of services.

Other criteria such as population, or dollar volume of retail sales, or grain handling volume, might have given a different hierarchy. The number of services was chosen as being representative of the general socio-economic activity present and as an indication of how attractive the centres would be to the grain producers in the hinterlands. This method of classification has been used throughout the whole series of prairie regional studies. Once established, the same grouping and the same ascending order within each group has been adhered to in virtually all the tabular material in the report.

The services present in each centre were ascertained by actual field survey, supplemented by reference to the telephone directory.

Centres that are not among the selected thirteen include: Bradshaw, a former grain delivery point but which has been used for storage only for several years; Del Bonita, a border point with no public grain facilities; and Pincher Creek, an important centre of 3,000 population but which lies about three miles south of the CP Crowsnest Line and so is not an official grain delivery point. Pincher Station is the elevator centre and thus it is included in the study.

The reserves of the Peigan and the Blood Indians occupy very large acreages within the study area. Much of this land is devoted to grain production, either farmed by members of the bands or leased to outsiders.

Table 2 shows the number and kind of services present in each of the thirteen places. All, of course, have at least one grain elevator company present. In the case of Raley, there are two elevators but both are owned by the same company. These were closed for delivery purposes during 1971-72 although their licenses are still valid as of January 1, 1972. Whiskey Gap, Woolford, Spring Coulee and Hill Spring were reduced to one company points when Alberta Wheat Pool took over Federal Wheat Pool. The data indicate that Jefferson has a post office. This is so, however the name used by the post office is Owendale. For all intents and purposes these are the same community. At Glenwood there is an active cheese factory which happened to be closed when the field survey was carried out, perhaps indicating a seasonal operation. A fruit and vegetable processing plant at Magrath has been closed down and the operation shifted to Lethbridge. An important mobile home manufacturing plant is located at Fort Macleod. Another such plant is located on the Blood Indian Reserve. Table 2 indicates increasing diversity as the number of services increases through the range of communities.

TABLE 1. CLASSIFICATION OF COMMUNITIES IN THE STUDY AREA

Too Small to Classify 0-2 Services	Hamlets 3-9 Services	Villages 10-35 Services	Towns 36-75 Services	Greater Towns 76 or more Services
Raley Whiskey Gap	Jefferson Woolford Brocket	Spring Coulee Pincher Station Hill Spring Glenwood	Magrath	Milk River Fort Macleod Cardston

TABLE 2. SERVICES PRESENT IN COMMUNITIES BY RANK, 1971

	TOO SMALL TO CLASSIFY			HAMLETS		VILLAGES		TOWNS		GREATER TOWNS			
	(0 — 2 Services)			(3 — 9 Services)		(10 — 35 Services)		(36 — 75 Services)		(76 + Services)			
	Raley	Whiskey Gap	Jefferson	Woolford	Brocket	Spring Coulee	Pincher Station	Hill Spring	Glenwood	Magrath	Milk River	Fort Macleod	Cardston
<i>Farm Products Assembly</i>													
Grain Elevator Company	1	2	2	2	2	2	2	2	2	4	4	3	4
Feed Lot							1			1		1	1
Seed Cleaning/Drying Plant											2	2	1
Egg Grading Stations									1			1	1
Dairies/Creameries							1					1	1
Others													
<i>Retail Trade</i>													
General Stores						1*		1	1	1	1	3	4
Grocery/Confectionery Stores/Butchers			1						1	2	3	4	5
Drug Stores										1	1	3	3
Hardware Stores										2	2	2	4
Clothing Stores											2	5	6
Farm Implement Dealers										2	3	3	5
Farm Supplies/Fertilizers/Chemicals	1			1			4	3	2	1	5	7	4
Service Stations					1		2	2	1	4	4	12	9
Garages/Body Shops										2	1	2	3
Auto Dealers										1	1	3	5
Auto Parts/Tire Stores/Wreckers									1		2	3	5
Appliance Sales and Services											2	1	3
Bulk Fuel Depot/Natural Gas/Propane						1	1	1	1	1	5	7	8
Liquor Venders											1	1	
Restaurants/Cafes/Drive-Ins							1			4	3	9	11
Lumber Yard/Building Supplies										2	2	2	2
Other Retail Stores					1					2	2	20	24

(continued)

(continued)

TABLE 2 (cont'd) SERVICES PRESENT IN COMMUNITIES BY RANK, 1971

	TOO SMALL TO CLASSIFY (0 — 2 Services)	HAMLETS (3 — 9 Services)	VILLAGES (10 — 35 Services)	TOWNS (36 — 75 Services)	GREATER TOWNS (76 + Services)
	Raley	Whiskey Gap	Jefferson	Woolford	Brocket
					Spring Coulee
					Pincher Station
					Hill Spring
					Glenwood
				Magrath	Milk River
					Fort Macleod
					Cardston
<i>Commercial Services</i>					
Beauty Salons					1
Barber Shops					2
Pool Rooms			1		1
Bowling Alleys					1
Theatres			1		1
Locker Plants					2
Dry Cleaning					2
Coin Laundry/Laundry				1	4
Car Wash					1
Hotel/Beverage Room/Motel					1
Plumbing and Heating					2
Construction Contractor					9
Welding Shop/Blacksmith					1
Shoe Repair					3
Law Office					6
Dentist					2
Doctors					1
Newspaper					2
Veterinarian					1
Funeral Parlor					1
Other Commercial Services		1	1	2	16
<i>Public Services</i>					
Recreational Facilities					
Meeting Hall					
Library					

TABLE 2. (cont'd) SERVICES PRESENT IN COMMUNITIES BY RANK, 1971

	TOO SMALL TO CLASSIFY		HAMLETS		VILLAGES			TOWNS		GREATER			
	(0 -2 Services)	(3 - 9 Services)	(10 - 35 Services)	(36 - 75 Services)	(76 + Services)								
	Raley	Whiskey Gap	Jefferson	Woolford	Brocket	Spring Coulee	Pincher Station	Hill Spring	Glenwood	Magrath	Milk River	Fort Macleod	Cardston
Religious Building					1	2		1	1	3	4	5	9
School									1	2	2	3	6
Village Office/Town Hall/R.M. Office								1	1	1	1	1	1
Fire Hall										1	1	1	1
Police Detachment										1	1	1	2
Water/Sewer Works									1	1	1	1	1
Power Services										1	1	1	1
Ag. Rep. Office										1			1
Medical/Health Clinic										2	1	3	3
Hospital										1	1	1	1
Road Maintenance Depot							1			1	1	1	1
Other Public Services					1			1	1	1	1	4	3
Financial Services													
Bank/Credit Union										1	1	3	3
Insurance/Real Estate										1	2	1	3
Communication and Transportation													
Telephone											1	1	1
Post Office			1			1			1	1	1	1	1
Bus Stop											1	1	1
Railway Station							1					1	1
Trucking Service												4	3
Air Field												1	
TOTAL	2	2	4	4	7	10	14	14	22	62	88	181	226

*gas pumps.

Population of the Communities

Total population of the communities in the study increased by 28 percent from 1941 to 1966 as shown in Table 3.

Major increases were noted in the greater towns only, which showed a combined average increase of 35 percent. The remaining communities in the study area with the exception of Magrath and Pincher Station declined. The population of the town of Magrath has fluctuated over the years and now seems to be declining.

TABLE 3. POPULATION OF COMMUNITIES IN THE STUDY AREA, CENSUS YEARS 1941 TO 1966

Communities	1941	1951	1956	1961	1966
Too Small to Classify					
Raley	n.a.	29	14	n.a.	n.a.
Whiskey Gap	n.a.	19	14	14	9
Hamlets					
Jefferson	20	48	52	48	n.a.
Woolford	72	26	39	40	21
Brocket	n.a.	n.a.	n.a.	n.a.	n.a.
Villages					
Spring Coulee	75	51	98	76	48
Pincher Station	42	31	80	79	46
Hill Spring	257	241	214	243	190
Glenwood	301	288	253	274	194
Towns					
Magrath	1,207	1,320	1,382	1,338	1,220
Greater Towns					
Milk River	335	481	642	801	861
Fort Macleod	1,912	1,860	2,103	2,490	2,709
Cardston	1,864	2,487	2,607	2,801	2,721
Study Area Total	6,085	6,881	7,498	8,204	8,019

n.a. — not available.

Source: Statistics Canada.

Farm Population

The study area encompasses five rural municipalities which are listed in Table 4. The majority of the municipalities are included in census divisions numbers 2 and 3. For purposes of this table, "farm" and "rural municipality" are synonymous.

All municipalities showed a steady decline in farm population between 1956 and 1966 as did the province. For the province it decreased 15.2 percent, from 332,191 to 281,583, while farm population in the study area declined by 19.6 percent, from 18,930 to 15,218.

This general trend in declining farm population has been noticed in the other regions studied in this series.

Prior to the 1956 census, subdivisions were based on boundaries of Municipal and Improvement Districts. The 1956 census was the first, in which subdivision boundaries were based on rural municipalities and census divisions. Therefore farm population data are not comparable from 1941 to 1966.

**TABLE 4. FARM POPULATION IN THE STUDY AREA, BY RURAL MUNICIPALITY,
CENSUS YEARS 1956 TO 1966**

Rural Municipality	1956	1961	1966
Indian Reserves	1,922	1,137	1,754
Pincher Creek	2,577	2,325	2,239
Warner	4,630	4,213	3,529
Cardston	4,930	4,159	3,664
Willow Creek	4,871	4,146	4,032
Study Area Total	18,930	15,980	15,218
Census Division No. 2 and No. 3 Total	39,627	34,765	33,524
Provincial Total	332,191	287,814	281,583

Source: Statistics Canada.

Population by Specified Age Groups and Sex

Table 5 contains 1966 census population data for incorporated communities, rural municipalities and census divisions making up the study area. Again the authors have accepted the data for rural municipalities as being representative of farm population. As noticed in other studies, the 20-24 age group, in most cases, is the smallest group in the under 65's. In the main this reflects the disruption of the family group over the war years, but to some extent it may also demonstrate that the young adults are more likely to have left the farm than any other group.

On Indian Reserves, the rate of decline in population of the 20-24 age group is not as great as other communities; however there is a sharper decline in population after age 45. As fewer Indians seem to be leaving the reserve it appears that they are dying at a younger age than people in other communities.

Males outnumbered females in the study area as well as in the province. In the study area 52 percent of the population was male while 48 percent was female. Provincially, the figures are 51 percent male and 49 percent female.

TABLE 5. POPULATION, BY SPECIFIED AGE GROUPS AND SEX, FOR INCORPORATED COMMUNITIES AND RURAL MUNICIPALITIES IN THE STUDY AREA, 1966

		(years of age)											
		Total	0-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-69	70 and over
Incorporated Communities													
Hill Spring	T.	190	14	34	26	24	9	14	23	18	15	6	7
	M.	98	11	12	13	13	6	7	11	9	9	3	4
	F.	92	3	22	13	11	3	7	12	9	6	3	3
Glenwood	T.	194	17	28	19	27	7	18	17	25	23	6	7
	M.	94	9	12	9	15	5	3	9	13	9	5	5
	F.	100	8	16	10	12	2	15	8	12	14	1	2
Milk River	T.	861	73	108	104	97	40	90	102	99	60	31	57
	M.	432	34	56	47	57	20	42	51	50	30	15	30
	F.	429	39	52	57	40	20	48	51	49	30	16	27
Magrath	T.	1,220	110	136	152	150	73	96	113	126	110	52	102
	M.	630	58	67	85	73	51	48	52	64	56	23	53
	F.	590	52	69	67	77	22	48	61	62	54	29	49
Fort Macleod	T.	2,709	299	334	288	214	172	291	270	265	219	108	249
	M.	1,374	159	174	151	112	91	147	124	125	105	56	130
	F.	1,335	140	160	137	102	81	144	146	140	114	52	119
Cardston	T.	2,721	253	351	331	275	172	212	242	265	223	111	286
	M.	1,337	126	179	174	146	100	105	107	134	107	47	112
	F.	1,384	127	172	157	129	72	107	135	131	116	64	174
Rural Municipalities ¹													
Pincher Creek	T.	2,739	319	338	333	282	165	283	297	336	223	58	105
	M.	1,482	173	160	184	159	88	141	155	184	145	35	58
	F.	1,257	146	178	149	123	77	142	142	152	78	23	47
Indian Reserves	T.	4,102	734	773	618	464	312	433	306	186	152	44	80
	M.	2,086	368	395	302	235	158	219	162	81	93	28	45
	F.	2,016	366	378	316	229	154	214	144	105	59	16	35
Cardston	T.	4,259	502	555	603	457	276	412	470	429	312	110	133
	M.	2,244	269	285	318	245	146	213	236	207	181	62	82
	F.	2,015	233	270	285	212	130	199	234	222	131	48	51
Willow Creek	T.	4,317	455	514	558	405	232	427	539	551	414	101	121
	M.	2,356	246	268	285	222	148	213	270	299	264	65	76
	F.	1,961	209	246	273	183	84	214	269	252	150	36	45
Warner	T.	4,386	554	604	587	430	305	457	501	426	289	90	143
	M.	2,262	280	320	305	228	173	238	237	230	147	42	62
	F.	2,124	274	284	282	202	132	219	264	196	142	48	81
Study Area Total	T.	27,698	3,330	3,775	3,619	2,825	1,763	2,733	2,880	2,726	2,040	717	1,290
	M.	14,395	1,733	1,928	1,873	1,505	986	1,376	1,414	1,396	1,146	381	657
	F.	13,303	1,597	1,847	1,746	1,320	777	1,357	1,466	1,330	894	336	633
Census Division No. 2 and No. 3 Total	T.	112,311	12,461	13,520	13,045	10,897	7,063	11,888	12,869	11,641	9,261	3,384	6,282
	M.	57,383	6,428	6,983	6,631	5,668	3,663	6,067	6,350	5,789	4,788	1,755	3,261
	F.	54,928	6,033	6,537	6,414	5,229	3,400	5,821	6,519	5,852	4,473	1,629	3,021
Provincial Total	T.	1,463,203	173,568	179,540	157,658	128,999	102,005	186,681	184,532	145,224	100,986	35,195	68,815
	M.	746,245	89,078	91,627	81,038	64,826	49,933	94,504	94,122	73,930	53,093	18,352	35,742
	F.	716,958	84,490	87,913	76,620	64,173	52,072	92,177	90,410	71,294	47,893	16,843	33,073

¹ Excluding all incorporated towns and villages.

T. — Total

M. — Male

F. — Female

Source: Statistics Canada.

The proportion of farm dwellers in the retired age group is significantly below the proportion of retired people living in the incorporated communities. The respective proportions are five percent on the farm and 13 percent in the incorporated communities. The provincial figure is 10 percent.

TABLE 6. PROPORTION OF POPULATION FALLING WITHIN THREE SPECIFIED AGE GROUPS

	Pre-School and School Age Group (0 to 19)	Working Age Group (20 to 64)	Retired Age Group (65 and over)
	—percent—		
Communities			
Hill Spring	51.6	41.6	6.8
Glenwood	46.9	46.4	6.7
Milk River	44.4	45.4	10.2
Magrath	44.9	42.5	12.6
Fort Macleod	41.9	44.9	13.2
Cardston	44.5	40.9	14.6
Rural Municipalities¹			
Pincher Creek	46.4	47.6	6.0
Indian Reserves	63.1	33.9	3.0
Cardston	49.7	44.6	5.7
Willow Creek	44.8	50.1	5.1
Warner	49.6	45.1	5.3
Study Area Total	48.9	43.8	7.3
Census Division No. 2 and No. 3 Total	44.5	46.9	8.6
Provincial Total	43.7	49.2	7.1

¹ Excluding all incorporated towns and villages.
Source: Statistics Canada.

School Enrolment

It is evident from the school enrolment figures (Table 7), that the Cardston area of Alberta is consolidating schools and locating them in larger communities. Of the too small to classify communities only Raley has an elementary school and only forty pupils attend. None of the hamlets have a school and only one village has a school to grade nine. The town of Magrath and all the greater towns have elementary and high schools. The greater town of Cardston has the largest school enrolment, 1,744 pupils.

TABLE 7. SCHOOL ENROLMENT IN THE STUDY AREA BY GRADES, SCHOOL YEAR 1970-71

Delivery Point	1	2	3	4	5	6	7	8	9	10	11	12	Total	Conveyed To
<i>Too Small to Classify</i>														
Raley	5	5	5	2	3	4	7	9					40	
Whiskey Gap														Cardston
<i>Hamlets</i>														
Jefferson														Cardston
Woolford														Cardston
Brocket														Pincher Creek
<i>Villages</i>														
Spring Coulee														Magrath
Pincher Station														Pincher Creek
Hill Spring														Glenwood & Cardston
Glenwood	22	21	19	26	21	31	24	25	26				215	
<i>Towns</i>														
Magrath	66	54	53	48	59	56	57	53	47	60	56	42	651	
<i>Greater Towns</i>														
Milk River	38	29	36	48	39	33	44	40	30	70	60	53	520	
Fort Macleod	106	120	104	126	123	144	119	117	117	88	62	78	1,304	
Cardston	123	143	157	153	147	154	149	120	136	169	147	146	1,744	

Source: Alberta Department of Education.

Post Office Revenue

Post office revenues (Table 8), serve as an indicator of the socio-economic activity in a community and the area it serves. In the communities too small to classify, the last post office closed in 1968. The name used by the post office at Jefferson is Owendale. These communities are very small and so close together they could be considered as one. Post offices in Pincher Station and Woolford closed in 1947 and 1958 respectively.

All the other communities have post offices and, with the exception of the Owendale-Jefferson post office, have shown an increase in revenues over the ten year period. The largest dollar increase from \$25,935 to \$49,448 was at Cardston. This is a 48 percent increase over the time period.

TABLE 8. POST OFFICE REVENUE IN THE STUDY AREA, FISCAL YEARS 1962-63 TO 1970-71

Delivery Point	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71
— dollars —									
<i>Too Small to Classify</i>									
Raley	Closed 1949								
Whiskey Gap	144	132	137	132	121	162	Closed 1968		
<i>Hamlets</i>									
Jefferson ¹	537	504	457	281	293	326	338	339	382
Woolford	Closed 1958								
Brocket	887	762	825	829	788	709	743	720	927
<i>Villages</i>									
Spring Coulee	848	853	890	947	925	909	1,123	1,232	1,338
Pincher Station	Closed 1947								
Hill Spring	1,965	1,848	1,644	1,665	1,596	1,506	1,534	1,885	2,679
Glenwood	1,456	1,534	1,455	1,517	1,412	1,393	1,723	2,164	2,816
<i>Towns</i>									
Magrath	9,483	10,074	10,424	11,746	11,479	11,574	13,309	16,179	19,009
<i>Greater Towns</i>									
Milk River	8,398	8,670	9,415	10,572	11,341	12,078	13,491	14,453	17,695
Fort Macleod	22,586	24,338	25,779	29,089	28,684	28,916	31,746	36,139	43,418
Cardston	25,935	27,277	27,925	31,266	31,007	32,534	36,763	41,482	49,448

¹ Revenue shown is for Owendale Post Office.
Source: Post Office Department.

Property Tax Assessment

Table 9 presents details of tax assessment for 1971 for each delivery point in the Cardston Area. The data are not intended to be a comprehensive description of the property tax assessment characteristics of the thirteen communities. The intent is to demonstrate, in a general way, the relative importance of railway and railway associated plant to a community's tax base. The percentage that the assessment of railway right-of-way property (including trackage, warehouses, bulk oil tanks, grain elevators, etc.) is of the centre's total assessment shows this relationship.

Generally the smaller the community is, the more it relies on right-of-way property for its tax base, for example the too small to classify communities of Raley and Whiskey Gap rely 100 percent. As there is no tax assessment for Indians on the reserve the hamlet of Brocket also shows 100.0 percent of the tax assessment derived from right-of-way properties. The two other hamlets of Jefferson and Woolford show 61.8 percent and 74.9 percent respectively. Villages range from 53.5 percent to 25.5 percent, and the town of Magrath 12.0 percent. All the greater towns show a low percentage rate of railway associated assessment with Fort Macleod lowest, at 4.5 percent.

This negative relationship between size of community and the railway associated proportion of total property tax assessment is, of course, a reflection of the greater diversity of economic activity in the larger centres.

TABLE 9 PROPERTY TAX ASSESSMENT FOR COMMUNITIES IN THE STUDY AREA

Delivery Point	Too Small to Classify			Hamlets			Villages			Towns			Greater Towns	
	Raley	Whiskey Gap		Jefferson	Woolford	Brocket	Spring Coulee	Pincher Stn.	Hill Spring	Glenwood	Magrath	Milk River	Fort Macleod	Cardston
Right of Way Properties														
Railway Property														
Land	1,040	270		340	30	640	270	540	440	590	920	1,260	3,060	3,840
Buildings	—	—		—	—	3,240	—	6,720	2,740	5,400	4,730	1,960	55,640	9,950
Business	—	—		—	—	—	—	—	—	—	—	—	—	—
Other Properties														
Land	100	150		920	500	1,040	1,080	4,480	950	1,020	3,080	15,150	9,210	13,930
Buildings	2,090	3,050		10,800	24,740	38,110	42,600	64,370	18,900	38,610	118,220	194,730	111,240	220,640
Business	—	—		2,380	6,190	—	9,170	—	—	10,440	32,130	45,100	—	—
Total Assessment on R.O.W. Properties	3,230	3,470		14,440	31,460	43,030	53,120	76,110	n.a.	56,060	159,080	258,200	179,150	248,360
Non R.O.W. Properties														
Land	—	—		100	670	—	2,740	4,830	66,100	11,230	107,010	119,690	590,060	671,092
Buildings	—	—		8,820	9,890	—	41,940	40,740	101,530	148,360	994,265	1,088,745	3,171,670	2,867,273
Business	—	—		—	—	—	1,540	—	n.a.	4,500	70,610	109,750	—	—
Total Assessment on Non R.O.W. Properties	—	—		8,920	10,560	—	46,220	45,570	n.a.	164,092	1,171,885	1,318,185	3,761,730	3,538,365
Total Tax Assessment	3,230	3,470		23,360	42,020	43,030	99,340	121,680	n.a.	220,152	1,330,965	1,576,385	3,940,880	3,786,725
Percent of Tax Assessment Derived from R.O.W. Properties	100.0	100.0		61.8	74.9	100.0	53.5	62.5	n.a.	25.5	12.0	16.4	4.5	6.6

Source: Alberta Department of Municipal Affairs.
n.a. not available

Carload Rail Traffic

Among the indicators chosen to measure the economic activity of the communities is carload rail traffic. This information is given in terms of the number of carloads in and out of each point in the study region. These data appear in Table 10. The information covers each separate community and is broken down into five general categories - products of agriculture; animals and animal products; mines; forests; and manufactures and miscellaneous. The products of agriculture category is made up almost entirely of grain and is virtually all outward traffic. Most of the carload rail traffic in the area is grain and varies with the size of the hinterland, the number of permit holders, and export grain marketings.

A clear pattern of carloads shipped in relation to size of community, is not too discernable. In general however, the greater the number of services and people the more freight traffic is generated. For example Whiskey Gap, which is considered too small to classify, in some years shipped more than most of the hamlets and the village of Hill Spring. Light traffic generators in relation to their size are Cardston and Hill Spring.

TABLE 10. REVENUE CARLOAD RAIL TRAFFIC BY DELIVERY POINT IN THE STUDY AREA, 1960 TO 1971

Delivery Point	1960		1961		1962		1963		1964		1965		1966		1967		1968		1969		1970		1971	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
<i>Too Small to Classify</i>																								
<i>Raley</i>																								
Products of Agriculture																								
Animals and Products																								
Products of Mines																								
Products of Forests																								
Manufactures and Misc.																								
Total	n.a.		n.a.		44		n.a.		2	53	2	46	5	87	2	60		56	19	1	54			48
<i>Whiskey Gap</i>																								
Products of Agriculture																								
Products of Mines	73	103			52		82		123		108		178		106		117	65		131				156
Products of Forests	1	3			1																			
Manufactures and Misc.	1																							
Total	2	73	3	103	2	52	1	82	3	123		108		178		106		117	1	65		131		156
<i>Hamlets</i>																								
<i>Jefferson</i>																								
Products of Agriculture																								
Products of Mines	64	82			59		59		125		52		127		69		52	38		63				137
Products of Forests	2	2																						
Manufactures and Misc.	1	3			2		1				3		1		1		1							
Total	3	64	5	82	3	59	1	59		125	3	52	1	127	1	69		53	38		63			137
<i>Woolford</i>																								
Products of Agriculture																								
Products of Mines	75	112			51		93		112		66		133		93		84	1	32		127			134
Products of Forests	7	5			5		7		11		11		10		14		13	12		15			8	
Manufactures and Misc.																								
Total	7	75	5	112	5	51	9	93	11	112	11	66	10	134	15	93	13	84	13	32	15	127		8 134
<i>Brocket</i>																								
Products of Agriculture																								
Animals and Products																								
Products of Mines					12	788			12		13		17		17		13	15		10			9	
Products of Forests					1			10			1													
Manufactures and Misc.					5	3		1			3		1	3	14		3	2		5	1		1	
Total	n.a.		n.a.		18	949	n.a.	23	261		14	236	18	304	31	209	16	149	17	119	15	238		9 191

(continued)

TABLE 10. (cont'd) REVENUE CARLOAD RAIL TRAFFIC BY DELIVERY POINT IN THE STUDY AREA, 1960 TO 1971

Delivery Point	1960		1961		1962		1963		1964		1965		1966		1967		1968		1969		1970		1971	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
Villages																								
Spring Coulee																								
Products of Agriculture					-	105			-	144	-	113	-	194	-	140	-	151	-	111	2	216	-	196
Animals and Products					-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Products of Mines					-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Products of Forests					-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-
Manufactures and Misc.					6	-			7	2	13	-	14	-	11	-	5	-	4	-	2	-	2	-
Total	n.a.	n.a.			6	105	n.a.		7	146	13	113	14	194	11	140	5	151	4	111	4	217	4	196
Pincher Station																								
Products of Agriculture					6	126			3	217	1	175	3	279	1	156	1	170	-	167	-	249	-	209
Animals and Products					1	115			2	51	6	61	-	57	-	59	-	70	-	50	-	39	-	57
Products of Mines					54	2			10	1	6	-	7	-	3	-	5	1	16	-	27	-	2	-
Products of Forests					4	16			13	1	-	-	7	-	6	-	-	-	-	-	2	-	4	-
Manufactures and Misc.					182	6			159	3	128	11	165	5	143	3	122	2	85	6	95	1	129	2
Total	n.a.	n.a.			247	265	n.a.		187	273	141	247	182	341	153	218	128	243	101	223	124	289	135	268
Hill Spring																								
Products of Agriculture	-	42	-	49	-	69	-	72	-	92	-	72	-	125	-	86	-	82	-	66	-	145	-	86
Animals and Products	-	12	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Products of Mines	17	-	13	-	18	-	16	-	18	-	18	-	16	-	13	-	14	-	16	-	13	-	8	-
Products of Forests	3	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manufactures and Misc.	14	-	27	-	10	7	17	9	12	-	21	-	11	1	6	-	8	-	5	-	3	-	3	-
Total	34	54	41	49	28	77	33	81	32	92	39	72	27	126	19	86	22	82	21	66	16	145	11	86
Glenwood																								
Products of Agriculture	1	197	-	159	-	176	-	181	-	295	-	202	-	328	-	241	1	236	2	144	-	228	-	191
Animals and Products	-	56	-	45	-	1	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
Products of Mines	5	-	8	-	4	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Products of Forests	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manufactures and Misc.	5	-	4	1	5	-	6	-	9	-	11	-	12	3	8	3	1	1	2	-	2	1	4	-
Total	11	253	12	205	9	177	7	181	9	295	11	202	12	333	8	244	2	237	5	144	2	229	4	191
Towns																								
Magrath																								
Products of Agriculture					1	356			4	459	5	319	3	592	3	394	4	328	4	227	4	439	-	485
Animals and Products					-	34			-	11	-	9	-	11	1	9	-	9	-	9	-	4	-	5
Products of Mines					5	1			3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(continued)

(continued)

TABLE 10 (cont'd) REVENUE CARLOAD RAIL TRAFFIC BY DELIVERY POINT IN THE STUDY AREA, 1960 TO 1971

Delivery Point	1960		1961		1962		1963		1964		1965		1966		1967		1968		1969		1970		1971	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
Products of Forests Manufactures and Misc. Total			13	—			12	—	15	—	10	—	12	—	13	—	11	—	12	—	12	—		
			119	—			111	2	134	3	114	—	103	3	110	1	74	2	35	11	26	—		
	n.a.	n.a.	138	391			130	473	154	331	127	603	119	406	127	338	89	238	51	454	38	490		
Greater Towns																								
Milk River																								
Products of Agriculture Animals and Products Products of Mines Product of Forests Manufactures and Misc. Total			—	411			—	670	—	659	—	1173	—	971	1	893	—	752	1	744	—	1129		
			—	9			—	6	—	1	—	—	—	—	—	—	—	—	—	—	—	—		
			3	—			1	—	—	—	1	—	—	—	—	—	—	—	—	13	—	—		
			4	—			4	—	4	—	15	—	6	—	12	—	33	—	5	—	1	—		
			83	1			98	6	121	4	117	2	131	—	54	2	46	4	6	12	15	—		
	n.a.	n.a.	90	421			103	682	125	664	133	1175	137	971	67	895	79	756	12	769	161	129		
Fort Macleod																								
Products of Agriculture Animals and Products Products of Mines Products of Forests Manufactures and Misc. Total			5	321			4	261	5	266	3	472	2	410	3	491	1	293	—	530	—	583		
			17	266			16	180	11	141	2	150	3	140	1	176	—	142	1	187	—	94		
			14	6			6	3	10	1	18	3	19	—	23	1	11	—	3	—	2	1		
			11	—			287	14	552	137	818	232	812	179	780	183	239	27	680	121	991	182		
			471	83			271	160	576	273	413	173	414	179	354	196	156	120	76	36	108	41		
	n.a.	n.a.	518	676			584	618	1154	818	1254	1030	1250	908	1161	1047	407	582	760	874	1101	901		
Cardston																								
Products of Agriculture Animals and Products Products of Mines Products of Forests Manufactures and Misc. Total			—	202			1	329	1	215	—	422	—	253	—	261	—	212	—	494	—	517		
			—	86			—	26	—	38	—	36	1	55	—	25	—	29	—	41	—	40		
			36	1			—	—	4	—	4	1	6	—	7	—	7	—	11	—	9	—		
			13	—			12	—	9	—	5	—	13	—	16	—	7	—	3	—	4	—		
			84	4			175	2	193	5	141	5	180	1	214	—	223	2	116	3	58	2		
	n.a.	n.a.	133	293			188	357	207	258	150	464	200	309	237	286	237	243	130	538	71	559		

Products of Agriculture — All grains, seeds, flour, hay and straw, fruits and vegetables, etc.

Animals and Products — All livestock, poultry, meats, fish, dairy products, etc.

Products of Mines — Coal, mineral ores and concentrates, cement, brick, asphalt, etc.

Products of Forests — Logs, lumber, all processed natural wood, plywood, shingles, etc.

Manufactures and Misc. — Petroleum products, chemicals, fertilizers, machinery and parts, vehicles, furniture, food and feed products, etc.

n.a. — not available.

Source: Canadian Pacific Railways.

Railway Freight Traffic Density

Table 11 displays the freight traffic density, in thousands of net tons per mile of road, over the four subdivisions of Canadian Pacific Railway located in the Cardston study area. This is graphically depicted in Figure A, a map separating those lines with a density greater than 100,000 n.t.p.m. from those less than 100,000 n.t.p.m., in 1968.

The data in Table 11 cover three years. Other than on the Crowsnest subdivision west of Fort Macleod there is no great difference between the density in 1963 compared to that in 1968. The great increase on that line is attributable to the increased flow of coal to Japan as well as the routing of ore from Pine Point to Trail. The traffic off the newly opened Brocket subdivision also adds to the density on the Crowsnest sub.

Another addition to the traffic comes from the rerouting of grain cars to the west coast. Formerly grain destined for Vancouver had to be sampled and graded in Calgary. The Board of Grain Commissioners found alternate ways of obtaining the necessary grain samples and the railway company was then able to by-pass Calgary, at the same time avoiding an awkward bottle-neck in the freight yards there. All of this increase was facilitated by the up-grading of trackage in the mountains of south-eastern British Columbia.

It will be noted that traffic is light on the Woolford subdivision and on both parts of the Cardston sub. The cutting back of mileage on both these lines would tend to increase the density, although it is unlikely to become very significant in contributing to the operating revenue of the railway even then.

The Brocket subdivision running south and west from Brocket on the Crowsnest sub was opened in 1965. It serves the oil companies' scrubbing plants south of Pincher Creek. Bulk sulphur and petroleum products move out over these tracks. There are no grain elevators on this line. However, there are sites that could accommodate grain handling facilities for servicing the area west of Cardston.

TABLE 11. RAILWAY FREIGHT TRAFFIC DENSITY ON LINES IN THE STUDY AREA, 1963, 1966 AND 1968

Railway Subdivision	Year	From	To	000's net tons per mile of road	Miles
<i>Canadian Pacific</i>					
Crownsnest	1963	Fort Macleod	Pincher	392	30
	1966	Fort Macleod	Pincher	3720	30
	1968	Fort Macleod	Pincher	3595	30
Cardston	1963	Magrath	Glenwood	74	56
	1966	Magrath	Glenwood	66	56
	1968	Magrath	Raley	93	20
	1968	Raley	Glenwood	25	36
Coutts	1963	Milk River	Coutts	315	12
	1966	Milk River	Coutts	800	12
	1968	Milk River	Coutts	751	12
Woolford	1963	Raley	Whiskey Gap	6	21
	1966	Raley	Whiskey Gap	21	21
	1968	Raley	Whiskey Gap	10	21
Brocket	1963	Mileage 51.5	Drywood	—	16
	1966	Mileage 51.5	Drywood	521	16
	1968	Mileage 51.5	Drywood	563	16

Source: Canadian Pacific Railways.

RAILWAY FREIGHT DENSITY, CARDSTON REGION 1968

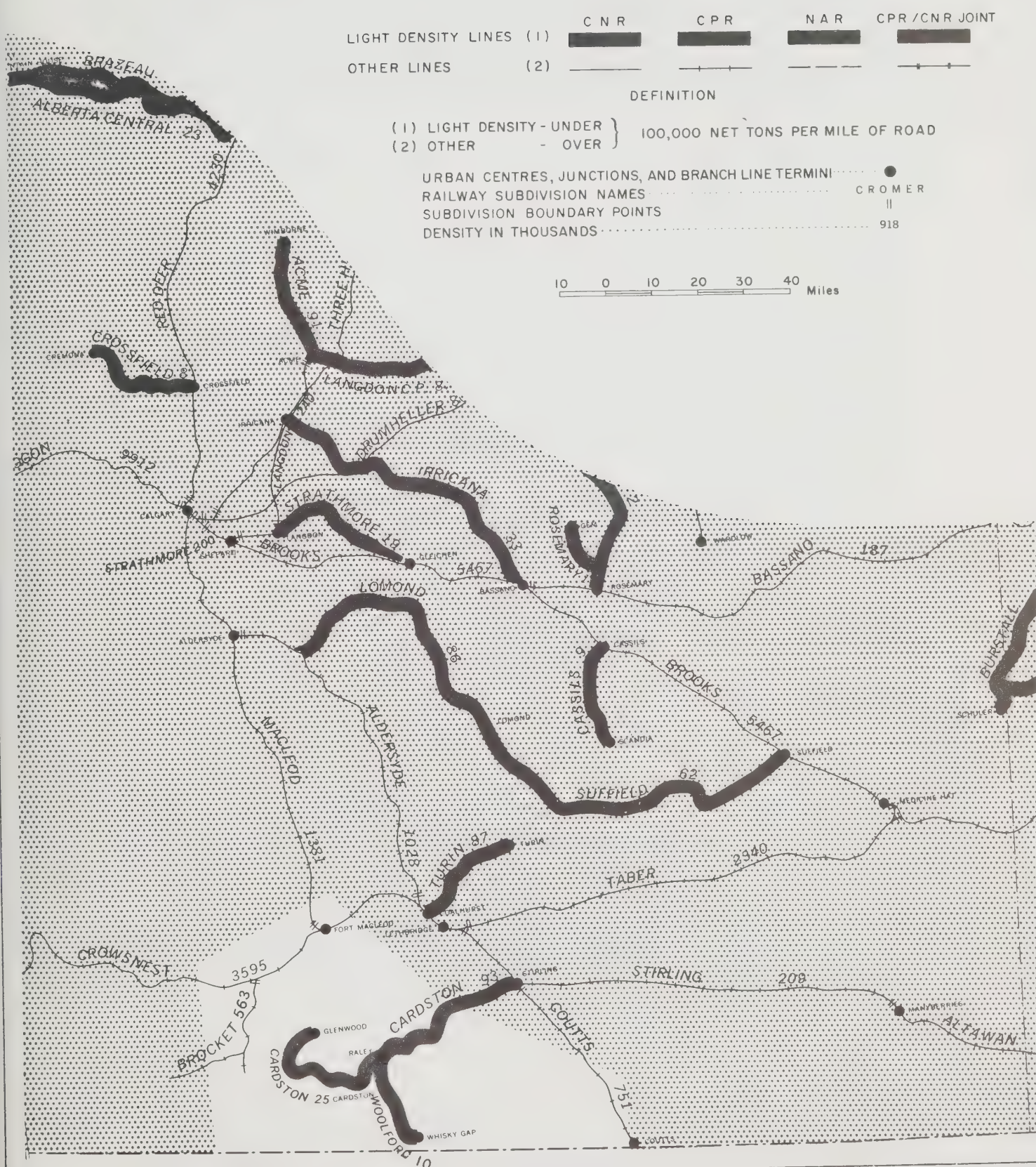


FIGURE A

PART II

AGRICULTURAL CHARACTERISTICS

Soil Capability for Agriculture

The Cardston area lies in the southwest corner of Alberta within the Third Prairie Steppe. The Rocky Mountains in the southwest and the Milk River Ridge in the southeast are the most predominant features in the study area. The area is drained by the South Saskatchewan River System with its tributaries, the Oldman, Waterton, Belly and St. Mary rivers and the Milk River system. Numerous old glacial spillways provide internal drainage.

The mixed grass type of range occurs in the northeastern part of the area while the Fesque type occurs over the rest of the area.

The area has been affected by the Laurentide glaciation and the Cordilleran glaciation.

Several main soil zones make up the area. The Dark Brown soil zone takes in Spring Coulee and Whiskey Gap. The thin Black and Black Soil zones cover the western portion of the area except for areas above 5,000 feet in elevation, where Podzolic and Brunisolic soils are found. The Dark Brown and Black are mainly Chernozemic. These soils are in Class II and III, mainly because of the climate factor. Soils at elevations above 4,800 feet, regardless of order are Class V and VI depending on Topography. A sand area occurs around Fort Macleod which rates as Classes IV, V and VI. Fine-textured glacial lacustrine areas occur around Pincher, Glenwood and Magrath. These soils are Class II.

Under dryland farming wheat is the principal crop, with barley, rye and flaxseed being the other important crops grown.

Sample Aerial Photos

Figure B

Figure B is a single aerial photograph taken in the vicinity of Cardston, Alberta on August 16, 1966 at a contact scale of about 1/50,000. The illustration depicts about 35 square miles.

The livestock emphasis in the area is readily indicated by the great amount of rough or native pasture and hay land. The stockwater dams throughout the illustrated area also indicate livestock.

Figure C

Figure C is a single aerial photograph taken in the vicinity of Fort Macleod, Alberta on August 7, 1970 at a contact scale of about 1/80,000. The illustration depicts about 77 square miles.

The livestock emphasis is indicated by the amount of rough or native pasture and hay land. The number of stockwater dams and the activity patterns near, and the buildings of, the farmsteads or farmyards, also indicate livestock farming.

The severe strip farming of the cultivated fields is predominant in the silty clay loam and heavier loam areas which are identified by the typical shape and pattern of the gullies.

Rge. 25

Twp. 3

Twp. 3

Twp. 2

Twp. 2



Rge. 25

A19436-79

AERIAL VIEW OF CARDSTON AREA

FIGURE B

Rge. 26

Rge. 25

Twp. 9

Twp. 9

Twp. 8

Twp. 8

Rge. 26

Rge. 25

A21814-21



AERIAL VIEW OF FORT MACLEOD AREA

FIGURE C

Temperature Norms and Extremes

In common with virtually all of Alberta, Saskatchewan, and Manitoba, the Cardston area has a continental climate, with warm summers and cold winters.

Table 12 contains details of temperature normals and extremes measured at official meteorological stations in or near the study area over a period of thirty years. The record low temperature reading of -47°F was registered at Cowley and Fort Macleod. The highest temperature measured was 104°F , recorded at Lethbridge. Thus a range in temperature of 151°F has been experienced in this region.

However, the mean daily temperatures during a month tell a less violent story. The July average is 66°F , which is about the same as that recorded in other study areas in southern Saskatchewan and Manitoba. The mean January temperature is 17°F , which is considerably above that in the other study areas so far reported on. This indicates the influence of the Chinook winds that reach their greatest frequency in the Cardston study area. Wind here is both a blessing and a curse. In winter the Chinooks can melt the snow and thus facilitate winter grazing; however, when the cold air returns crusting of the melted snow can occur. At such times grazing stock and wildlife have difficulty obtaining their food. In the summer the almost constant wind has a drying effect and evaporation becomes a problem.

The growing season averages about 140 days throughout the study area, but it is quite variable from year to year. The frost-free season averages 117 days and has ranged from 80 to 170 days. A good variety of crops, including grain corn, is possible in the region as growing-degree-days, basis 42°F , average above 2,700 per year.

On the reverse side of the soil capability map that is included as part of this report there is a brief description of the climate of the study area. Other related reading is a publication by E. Harcourt Hobbs of the Lethbridge Research Station, entitled *The Agricultural Climate of the Lethbridge Area*.

TABLE 12. TEMPERATURE, NORMALS AND EXTREMES FOR METEOROLOGICAL STATIONS IN AND NEAR THE STUDY AREA

Meteorological Station	January	February	March	April	May	June	July	August	September	October	November	December	Year
Cowley													
Mean Daily Maximum ¹	28.2	28.8	36.5	49.2	61.0	66.0	76.0	72.9	64.1	53.7	39.9	33.0	50.8
Mean Daily Minimum ¹	6.4	8.2	16.7	27.4	36.0	42.2	47.0	44.9	37.9	30.1	19.3	13.4	27.6
Mean Daily Temperature ¹	17.3	19.0	26.6	38.3	48.5	54.1	61.5	58.9	51.0	41.9	29.6	23.2	39.2
High Temperature ²	60	57	69	84	85	94	99	95	96	84	71	64	99
Low Temperature ²	-47	-37	-36	-13	-4	26	30	29	17	-16	-32	-35	-47
Fort Macleod													
Mean Daily Maximum ²	27.2	30.0	37.5	53.4	65.0	70.8	80.9	78.0	67.9	57.4	41.4	33.7	53.6
Mean Daily Minimum ²	8.9	10.9	18.9	31.3	40.5	47.7	53.0	49.9	42.6	35.7	23.4	16.5	31.6
Mean Daily Temperature ²	18.1	20.5	28.2	42.4	52.8	59.3	67.0	64.0	55.3	46.6	32.4	25.1	42.6
High Temperature ³	67	66	82	89	93	100	102	99	98	86	79	77	102
Low Temperature ³	-45	-47	-34	-8	5	14	35	29	0	-7	-38	-46	-47
Lethbridge													
Mean Daily Maximum ⁴	27.3	29.5	37.5	53.4	64.4	70.0	79.9	77.0	67.2	56.8	41.2	33.4	53.1
Mean Daily Minimum ⁴	7.2	9.1	17.6	30.1	40.0	46.9	52.0	49.5	42.4	33.8	21.3	14.2	30.4
Mean Daily Temperature ⁴	17.3	19.3	27.6	41.8	52.2	58.5	66.0	63.3	54.8	45.3	31.3	23.8	41.8
High Temperature ³	65	68	76	83	96	101	104	101	98	89	74	67	104
Low Temperature ³	-45	-44	-36	-14	11	29	33	29	4	-15	-29	-45	-45
Raymond													
Mean Daily Maximum ³	27.5	27.7	38.8	52.5	67.3	72.2	81.5	77.6	67.8	56.9	41.4	34.8	53.8
Mean Daily Minimum ³	7.0	6.8	18.5	29.2	40.7	47.5	51.2	48.7	40.8	33.1	21.4	15.6	30.0
Mean Daily Temperature ³	17.3	17.3	28.7	40.9	54.0	59.9	66.4	63.2	54.3	45.0	31.4	25.2	41.9
High Temperature ²	63	66	72	84	95	99	100	100	92	90	73	63	100
Low Temperature ²	-45	-42	-27	-12	16	34	37	34	1	-5	-33	-33	-45

1. Data for these normals were from the full ten-year period 1951-1960 adjusted to the standard normal period 1931-1960.
2. Normals were computed directly from a period of record of 25 to 30 years. In most cases the record existed over the full 30 years.
3. These averages are based on the period of record of 10-24 years during the period 1931 to 1960. No adjustment factor has been used.
4. These averages are based on the full 30-year period, from 1931 to 1960.

Source: Canada Department of Transport, Meteorological Branch.

Precipitation

Table 13 contains data concerning rainfall and snowfall, in rainfall equivalent, for the Cardston study area. Precipitation averages about 17.5 inches for the whole study area, varying from 19.5 inches in the western part of the region to about 16.0 inches in the east. The higher figures in the west reflect greater snowfall. Forty percent of the precipitation falls during the growing season, with June experiencing the most rainfall of any month.

As E. Harcourt Hobbs writes in the *Agricultural Climate of the Lethbridge Area*, "The mountains to the west disrupt what would be the normal flow of moist air. The important remaining precipitation source is the generally northerly movement across the continent of large masses of warm, moist air, which, if met by cold arctic air, may produce significant amounts of precipitation. Occasionally these air masses will stall over the area causing several days of moderate-to-heavy precipitation. Typical examples are the very heavy snowfall on March 25 and 26, 1972, the 53.9 inches of snow recorded in April 1967 and 37.2 inches in April 1920." Mr. Hobbs reports that the actuarial risk of hail in the Lethbridge area is among the lowest anywhere south of Edmonton.

A perusal of the Soil Capability for Agriculture map will indicate that there are extensive areas of good soil around Cardston and Magrath but that production is limited by adverse climate. This could be due to poor distribution of rainfall throughout the growing season, although the averages shown in Table 13 do not indicate any great problem. However, during the late summer and fall there have been relatively long dry periods, lasting up to 45 days without rain. In general, however, lack of precipitation, although limiting, does not appear to be a crucial problem in this study area.

TABLE 13. MONTHLY AND ANNUAL AVERAGE PRECIPITATION FOR METEOROLOGICAL STATIONS IN AND NEAR THE STUDY AREA

Meteorological Stations	January	February	March	April	May	June	July	August	September	October	November	December	Year
Cowley¹													
Mean Rainfall	0.07	0.02	0.09	0.45	1.69	3.09	1.49	1.30	1.41	0.53	0.10	0.13	10.37
Mean Snowfall	11.7	10.9	14.2	9.7	3.8	0.1	0.0	0.0	2.7	9.0	13.9	14.8	90.8
Mean Total Precipitation ³	1.24	1.11	1.51	1.42	2.07	3.10	1.49	1.30	1.68	1.43	1.49	1.61	19.45
Fort Macleod²													
Mean Rainfall	0.05	0.02	0.12	0.78	2.38	3.60	1.67	1.57	1.58	0.46	0.10	0.05	12.38
Mean Snowfall	6.8	9.3	10.4	5.0	0.1	0.0	0.0	0.0	1.2	4.8	8.3	7.0	52.9
Mean Total Precipitation ³	0.73	0.95	1.16	1.28	2.39	3.60	1.67	1.57	1.70	0.94	0.93	0.75	17.67
Lethbridge¹													
Mean Rainfall	0.01	0.01	0.08	0.68	1.84	3.15	1.69	1.63	1.06	0.43	0.05	0.03	10.66
Mean Snowfall	8.7	10.4	9.8	6.8	2.5	0.5	0.0	0.1	3.0	6.4	10.0	7.5	65.7
Mean Total Precipitation ³	0.88	1.05	1.06	1.36	2.09	3.20	1.69	1.64	1.36	1.07	1.05	0.78	17.23
Raymond¹													
Mean Rainfall	0.04	0.01	0.06	0.82	1.56	2.45	1.21	1.69	1.13	0.62	0.14	0.01	9.74
Mean Snowfall	7.8	8.0	10.0	8.6	1.0	0.0	0.0	0.0	1.5	5.3	10.8	9.4	62.4
Mean Total Precipitation ³	0.82	0.81	1.06	1.68	1.66	2.45	1.21	1.69	1.28	1.15	1.22	0.95	15.98

1. These averages are based on the period of record of 10 to 24 years during the period 1931 to 1960. No adjustment factor has been used.
2. Normals were computed directly from a period of record of 25 to 30 years. Within the period 1931-1960, in most cases the record existed over the full 30 years.
3. Total precipitation measured in inches of rain. Ten inches of snow equals one inch of rain.

Source: Canada Department of Transport, Meteorological Branch.

TABLE 14. CLIMATIC SUMMARY, LETHBRIDGE, ALBERTA (MONTHLY MEANS)

Month	Temperature (°F)			Precipitation (in.)			Sunshine (hr/day)	Wind (hrly velocity) 1938-1969	Atmospheric pressure (mb) 1938-1969	Evaporation (in.) 1923-1968	Relative Humidity (%) 1957-1966
	Max	Min	Avg	Rain	Snow	Total					
January	26.7	4.7	15.7	0.02	7.1	0.73	3.20	14.4	908.0		74
February	30.7	8.3	19.5	0.01	7.5	0.76	4.38	13.7	907.1		74
March	39.5	16.5	28.0	0.07	8.5	0.92	5.36	13.4	906.6		71
April	54.4	28.8	41.6	0.55	7.0	1.25	6.94	14.4	907.5		62
May	63.6	38.2	50.9	2.01	1.7	2.18	8.34	12.7	907.7	4.46	60
June	70.6	45.9	58.3	3.05	0.1	3.06	9.20	12.4	907.4	4.94	63
July	78.7	50.3	64.5	1.67	0.0	1.67	11.08	11.0	909.4	6.17	59
August	76.6	48.0	62.3	1.53	0.0	1.53	9.74	10.8	909.3	5.20	58
September	66.6	40.3	53.4	1.41	2.3	1.64	7.04	12.2	909.2	3.48	57
October	57.2	32.0	44.6	0.46	4.7	0.93	5.52	14.6	908.2		54
November	42.0	19.9	31.0	0.04	7.2	0.76	3.78	15.7	907.6		66
December	32.1	11.4	21.7	0.02	7.3	0.75	3.04	15.9	906.5		68
Annual mean	53.2	28.7	41.0				6.47	13.4	907.9		64
Annual total				10.84	53.4	16.18					

Source: Canada Department of Agriculture.

Sales of Farm Land in the Study Area

An indication of farm land transactions in the study area is provided by the data in Table 15. For data purposes the authors examined 152 sales that were made in the eight year period between 1963 and 1970. The greatest number of these transactions, 24, took place in 1965 and 1969. The smallest number of transactions, 8, took place in 1964. These transactions are representative in the sense that family and other types of deals involving concessions that would distort the value data were excluded from the tabulations. Only Farm Credit Corporation transactions were taken into consideration.

Generally prices increased. Many factors enter into determining farm land value. Superficially, it would appear that at least the following three factors could be cited in explaining the observed price levels: Class 1 and 2 land is generally higher priced relative to class 3 or 4. General economic inflation is, in time, reflected in rising land values. Finally when grain marketings keep pace with production, there is an upward pressure on land values, but when the supply of grain becomes too large relative to demand the pressures on land values is downward.

TABLE 15. REPRESENTATIVE FARM VALUES, BY SALES PRICE PER ACRE, 1963 TO 1970

Year	Number of Transactions	Total Number of Acres	Price Per Acre		
			Low	High	Average
			\$	\$	\$
1963	18	7,700	26.32	89.06	51.49
1964	8	2,576	31.25	100.00	71.23
1965	24	11,574	14.08	126.58	55.77
1966	23	10,480	26.88	127.39	68.22
1967	30	13,605	37.41	140.62	82.15
1968	12	5,946	49.12	150.21	84.87
1969	24	9,746	35.00	150.00	82.72
1970	13	5,535	35.88	121.79	66.50

Source: Farm Credit Corporation.

Disposition of Grain Farm Acreage, Crop Years 1962-63, 1969-70

The number of acres associated with each delivery point and land use are shown in some detail for two crop years in Tables 16 and 17. This information is provided by the farmers in the affidavits substantiating their requests for delivery permit books.

Total farm acreage increased for the study area as a whole. In 1969-70 the farm acreage increased by 38,267 acres from the 1962-63 level. Although there was this general increase in acreage many of the smaller communities showed losses in

acreage tributary to grain elevators. The greatest decrease in acreage is at Jefferson where there was a drop in acres from 42,021 acres in 1962-63 to 15,151 acres in 1969-70. Raley, classified as too small to classify, showed an increase of 2,205 acres. Whiskey Gap, the other too small to classify community, declined by 1,080 acres in the same time period. All the hamlets declined in size over the time period. Three of the five villages increased their seeded acreage. Hill Spring had the greatest increase of this group of 5,921 acres. The seeded acreage increased in the town of Magrath and the greater towns of Fort Macleod and Cardston. There was a decrease in Milk River.

Some change occurred in the land use pattern between 1962-63 and 1969-70 in the total study area. Cropping practices approximate a three year rotation of summerfallow, hard wheat, oats and other crops. One quarter of the land is unimproved and does not enter into the rotation.

There was an increase in barley and rapeseed. Barley increased from 94,323 acres in 1962-63 to 199,806 acres in 1969-70. This is an increase of over a 100,000 acres. Flaxseed increased from 5,225 acres in 1962-63 to 10,009 acres in 1969-70. Total unimproved land decreased by 38,871 acres.

Hard red spring wheat and barley were strongly predominant in the study area in 1969-70 as against just wheat in 1962-63. Variations may be seen by examining the land use at individual delivery point.

Summerfallow decreased 40,247 acres between the two crop years.

TABLE 16. SEEDED ACREAGE ON GRAIN FARMS IN THE STUDY AREA, BY CROP AND DELIVERY POINT, 1962-63

Delivery Point	Wheat	Durum	Oats	Barley	Rye	Summer Fallow	Forage Crops	Flaxseed	Rapeseed	Other Crops	Unimproved Land	Total
<i>Too Small to Classify</i>												
Raley												
Acres	3,592	—	591	1,437	85	5,302	291	—	—	90	1,002	12,390
Percent of Total	29.0	—	4.8	11.6	0.7	42.8	2.3	—	—	0.7	8.1	100.0
Whiskey Gap												
Acres	8,046	—	1,872	5,915	346	14,014	3,239	—	—	1,050	19,757	54,239
Percent of Total	14.8	—	3.5	10.9	0.7	25.8	6.0	—	—	1.9	36.4	100.0
<i>Hamlets</i>												
Jefferson												
Acres	5,749	—	1,074	7,089	706	10,836	4,561	—	—	—	12,006	42,021
Percent of Total	13.7	—	2.5	16.9	1.7	25.8	10.8	—	—	—	28.6	100.0
Woolford												
Acres	6,876	—	1,176	4,116	71	11,219	2,251	40	210	—	7,846	33,805
Percent of Total	20.3	—	3.5	12.2	0.2	33.2	6.7	0.1	0.6	—	23.2	100.0
Brocket												
Acres	19,540	—	6,620	5,227	357	24,873	8,032	477	—	55	37,140	102,321
Percent of Total	19.1	—	6.5	5.1	0.3	24.3	7.8	0.5	—	0.1	36.3	100.0
<i>Villages</i>												
Spring Coulee												
Acres	9,693	325	1,436	4,241	75	13,075	2,427	420	—	20	5,346	37,058
Percent of Total	26.2	0.9	3.9	11.4	0.2	35.3	6.5	1.1	—	0.1	14.4	100.0
Pincher Station												
Acres	14,074	398	8,866	6,904	232	18,057	21,635	67	80	1,795	64,534	136,642
Percent of Total	10.3	0.3	6.5	5.1	0.2	13.2	15.8	0.0	0.1	1.3	47.2	100.0
Hill Spring												
Acres	4,277	—	4,104	5,553	90	6,659	10,366	—	40	776	22,100	53,965
Percent of Total	7.9	—	7.6	10.3	0.2	12.3	19.2	—	0.1	1.4	41.0	100.0
Glenwood												
Acres	15,068	590	2,102	7,341	130	19,979	5,309	60	62	227	8,918	59,786
Percent of Total	25.2	1.0	3.5	12.3	0.2	33.4	8.9	0.1	0.1	0.4	14.9	100.0

(continued)

TABLE 16. (cont'd) SEEDED ACREAGE ON GRAIN FARMS IN THE STUDY AREA, BY CROP AND DELIVERY POINT, 1962-63

Delivery Point	Wheat	Durum	Oats	Barley	Rye	Summer Fallow	Forage Crops	Flaxseed	Rapeseed	Other Crops	Unimproved Land	Total
<i>Towns</i>												
Magrath												
Acres	23,884	832	5,274	14,062	1,065	40,577	7,950	1,529	45	775	39,278	135,271
Percent of Total	17.7	0.6	3.9	10.4	0.8	30.0	5.9	1.1	0.0	0.6	29.0	100.0
<i>Greater Towns</i>												
Milk River												
Acres	52,402	16,861	4,806	17,183	3,687	88,211	2,289	850	—	1,195	27,969	215,453
Percent of Total	24.3	7.8	2.2	8.0	1.7	40.9	1.1	0.4	—	0.6	13.0	100.0
Fort Macleod												
Acres	26,502	5,719	8,746	6,725	671	40,487	7,263	1,412	—	15	46,517	144,057
Percent of Total	18.4	4.0	6.1	4.7	0.4	28.1	5.0	1.0	—	0.0	32.3	100.0
Cardston												
Acres	21,259	100	4,555	8,530	1,182	29,009	13,000	370	336	2,382	40,783	121,506
Percent of Total	17.5	0.1	3.7	7.0	1.0	23.9	10.7	0.3	0.3	1.9	33.6	100.0
<i>Study Area Total</i>												
Acres	210,962	24,825	51,222	94,323	8,697	322,298	88,613	5,225	773	8,380	333,196	1,148,514
Percent of Total	18.4	2.2	4.5	8.2	0.7	28.1	7.7	0.4	0.1	0.7	29.0	100.0

Source: Canadian Wheat Board.

TABLE 17. SEEDED ACREAGE ON GRAIN FARMS IN THE STUDY AREA, BY CROP AND DELIVERY POINT, 1969-70

Delivery Point	Wheat	Durum	Oats	Barley	Rye	Summer Fallow	Forage Crops	Flaxseed	Rapeseed	Other Crops	Unimproved Land	Total
<i>Too Small to Classify</i>												
Raley												
Acres	4,266	—	610	3,505	—	3,286	2,002	—	30	45	851	14,595
Percent of Total	29.2	—	4.2	24.0	—	22.5	13.7	—	0.2	0.3	5.9	100.0
Whiskey Gap												
Acres	7,932	—	1,461	7,070	—	11,714	5,700	41	60	40	19,141	53,159
Percent of Total	14.9	—	2.8	13.3	—	22.0	10.7	0.1	0.1	0.1	36.0	100.0
Hamlets												
Jefferson												
Acres	1,725	—	290	4,109	—	3,540	1,736	—	—	—	3,751	15,151
Percent of Total	11.4	—	1.9	27.1	—	23.4	11.5	—	—	0.0	24.7	100.0
Woolford												
Acres	2,810	1,300	657	7,793	—	7,462	2,387	—	—	—	6,791	29,200
Percent of Total	9.6	4.4	2.2	26.7	—	25.6	8.2	—	—	0.0	23.3	100.0
Brocket												
Acres	16,683	340	4,385	12,595	—	23,469	6,599	784	800	240	32,110	98,005
Percent of Total	17.0	0.4	4.5	12.9	—	23.9	6.7	0.8	0.8	0.2	32.8	100.0
Villages												
Spring Coulee												
Acres	5,023	—	380	16,283	—	11,064	2,635	720	88	310	5,398	41,901
Percent of Total	12.0	—	0.9	38.9	—	26.4	6.3	1.7	0.2	0.7	12.9	100.0
Pincher Station												
Acres	14,349	60	6,876	16,010	—	19,256	24,058	110	50	10	52,146	132,925
Percent of Total	10.8	0.1	5.2	12.0	—	14.5	18.1	0.1	0.0	0.0	39.2	100.0
Hill Spring												
Acres	4,324	—	3,070	10,297	—	7,841	13,160	—	220	185	20,789	59,886
Percent of Total	7.2	—	5.1	17.2	—	13.1	22.0	—	0.4	0.3	34.7	100.0
Glenwood												
Acres	16,503	810	2,437	11,035	221	12,544	5,444	750	975	—	7,881	58,600
Percent of Total	28.2	1.4	4.1	18.8	0.4	21.4	9.3	1.3	1.7	—	13.4	100.0

(continued)

TABLE 17. (cont'd) SEEDED ACREAGE ON GRAIN FARMS IN THE STUDY AREA, BY CROP AND DELIVERY POINT, 1969-70

Delivery Point	Wheat	Durum	Oats	Barley	Rye	Summer Fallow	Forage Crops	Flaxseed	Rapeseed	Other Crops	Unimproved Land	Total
<i>Towns</i>												
Magrath												
Acres	26,723	170	3,671	24,723	230	37,857	8,286	776	—	160	35,377	137,973
Percent of Total	19.4	0.1	2.7	17.9	0.2	27.4	6.0	0.6	—	0.1	25.6	100.0
<i>Greater Towns</i>												
Milk River												
Acres	46,015	15,750	3,756	25,474	1,365	80,816	7,903	2,812	370	724	24,496	209,481
Percent of Total	22.0	7.5	1.8	12.2	0.6	38.6	3.8	1.3	0.2	0.3	11.7	100.0
Fort Macleod												
Acres	21,832	15,589	7,503	17,451	550	36,901	21,201	1,585	—	97	45,285	167,994
Percent of Total	13.0	9.3	4.5	10.4	0.3	22.0	12.6	0.9	—	0.1	26.9	100.0
Cardston												
Acres	30,027	1,103	3,010	43,461	345	26,301	19,230	2,431	965	729	40,309	167,911
Percent of Total	17.9	0.7	1.8	25.9	0.2	15.7	11.4	1.4	0.6	0.4	24.0	100.0
<i>Study Area Total</i>												
Acres	198,212	35,122	38,106	199,806	2,711	282,051	120,341	10,009	3,558	2,540	294,325	1,186,781
Percent of Total	16.7	3.0	3.2	16.8	0.2	23.8	10.1	0.9	0.3	0.2	24.8	100.0

Source: Canadian Wheat Board.

Crop Yields in the Study Area

Table 18 shows the ten year average yield of wheat, oats, barley, rye and flaxseed in the study area from the year 1960 to 1969. Cardston recorded the highest ten year average yield of wheat in the study area with 31 bushels per acre. Jefferson recorded the second highest yield of 30 bushels per acre. The highest average yield of other crops shown are 59 bushels to the acre of oats, 51 bushels to the acre of barley, 35 bushels for rye and 17 for flaxseed.

The reader is referred to the section on Soil Capability of Agriculture in Part II of this report for a discussion on crop yields and soil capability.

TABLE 18. TEN-YEAR AVERAGE YIELD OF WHEAT, OATS, BARLEY, RYE AND FLAXSEED, BY DELIVERY POINT, 1960 to 1969

Delivery Point	Wheat					Oats					Barley					Rye					Flaxseed				
	10-year					10-year					10-year					10-year					10-year				
	High	Low	Range	Average	High	Low	Range	Average	High	Low	Range	Average	High	Low	Range	Average	High	Low	Range	Average	High	Low	Range	Average	
— bushels per acre —																									
Too Small to Classify																									
Raley	40	9	31	26 ¹	70	30	40	50 ¹	60	30	30	41 ¹	40	20	20	29 ²	—	—	—	—	—	—	—	—	
Whiskey Gap	30	13	17	22	60	12	48	41 ¹	50	20	30	38	30	10	20	19 ³	10	10	—	—	10	10	—	10 ⁴	
Hamlets																									
Jefferson	40	20	20	30	70	50	20	59	60	35	25	51	30	20	10	25 ⁵	10	10	—	—	10	10	—	10 ⁴	
Woolford	40	18	22	27	70	40	30	58	60	30	30	48	25	4	21	17 ⁶	15	10	5	—	15	10	5	12 ⁷	
Brocket	30	12	18	23	60	20	40	44	65	25	40	44	27	10	17	19 ²	20	6	14	—	20	6	14	13 ¹	
Villages																									
Spring Coulee	40	15	25	26	70	20	50	44	60	20	40	37	25	18	7	20 ³	20	9	11	—	20	9	11	14 ¹	
Pincher Station	35	10	15	23	75	15	60	45	55	20	35	34	20	10	10	16 ⁸	20	10	10	—	20	10	10	14 ²	
Hill Spring	35	18	17	27	70	30	40	48	60	25	35	40	30	30	—	30 ⁴	—	—	—	—	—	—	—	—	
Glenwood	40	15	25	28	80	37	43	57	66	35	31	51	50	20	30	35 ³	20	8	12	—	20	8	12	17	
Towns																									
Magrath	35	16	19	24	80	25	55	50	60	30	30	43	30	18	12	24 ¹	20	12	8	—	20	12	8	15	
Greater Towns																									
Milk River	30	4	26	19	60	10	50	40 ³	45	10	35	33	30	6	24	16	20	5	15	—	20	5	15	10	
Fort Macleod	30	9	21	20	60	20	40	40	50	20	30	35	25	10	15	17 ⁵	18	6	12	—	18	6	12	12	
Cardston	40	17	23	31	65	30	35	54	55	20	35	46	35	15	20	22	20	10	10	—	20	10	10	16 ¹	

¹ Nine Year Average.
² Four Year Average.
³ Seven Year Average.
⁴ One Year Average.

⁵ Eight Year Average.
⁶ Five Year Average.
⁷ Two Year Average.
⁸ Six Year Average.

Protein Content

The percentage of protein contained in hard red spring wheat has become more important in the grading and marketing of wheat. Incorporated in the new grading system under the Canada Grain Act are new regulations concerning protein content. Although there are other quality factors to consider protein content is closely watched by millers and bakers.

Table 19 shows protein content for 3 or more samples of wheat, by delivery point, over the eight year period. It was felt by the authors that less than 3 samples was too few to form a reasonable conclusion. This is the main reason for the large number of blanks in the table.

Totals for the study area and the province are also shown. It can be seen from the data that protein content varies considerably from year to year and from region to region. The lowest percentage recorded in the study area was at Cardston, at 9.2 percent in 1971. This, however was still above the provincial low of 7.8 percent. The highest level reached, was 17.0 percent at Fort Macleod in 1964 and 1971. This was below the provincial high of 19.1 in 1964. The majority of readings are in the 10 to 14 percent range. In terms of annual averages the highest record occurred at Milk River in 1971, 14.6 and the lowest occurred at Cardston in 1969, 10.8 percent.

The top grades of Western Canadian wheat have always commanded a premium in world markets, mainly because of the quality of the protein. Unfortunately, a mere percentage designation tells nothing about the quality which appears to be related to genetic-ecological factors of wheat production. Thus a 13.1 percent protein wheat of a certain variety from a certain production area could be superior to a 13.9 percent protein wheat of a different variety produced in another country.

TABLE 19. PROTEIN CONTENT OF HARD RED SPRING WHEAT, BY DELIVERY POINT, 1964 TO 1971

Delivery Point	1964		1965		1966		1967		1968		1969		1970		1971	
	Average	Range	Average	Range	Average	Range	Average	Range	Average	Range	Average	Range	Average	Range	Average	Range
-- percent --																
<i>Too Small to Classify</i>																
Raley	No Information Available															
Whiskey Gap	-	-	-	-	11.4	10.7-12.5	13.1	12.2-14.6	-	-	-	-	-	-	-	-
<i>Hamlets</i>																
Jefferson	No Information Available															
Woolford	-	-	-	-	11.6	10.8-12.5	-	-	-	-	-	-	-	-	-	-
Brocket	12.1	11.2-13.2	-	-	-	-	-	-	-	-	14.1	13.2-15.6	-	-	-	-
<i>Villages</i>																
Spring Coulee	No Information Available															
Pincher Station	13.5	11.5-14.9	-	-	-	-	-	-	13.2	12.2-14.1	11.9	10.2-12.9	12.9	10.9-15.2	-	-
Hill Spring	No Information Available															
Glenwood	-	-	-	-	11.8	10.7-12.6	-	-	-	-	-	-	-	-	-	-
<i>Towns</i>																
Magrath	13.6	12.7-14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Greater Towns</i>																
Milk River	14.0	13.2-16.0	13.6	11.3-15.2	12.7	10.5-15.4	13.8	11.9-15.2	12.0	10.1-14.7	12.1	11.0-13.1	13.3	12.4-14.1	14.6	9.2-17.0
Fort Macleod	14.3	12.8-17.0	13.2	11.8-14.8	12.8	12.3-13.4	13.4	12.7-14.5	13.4	12.4-14.1	12.4	11.0-14.7	12.0	11.2-12.5	14.5	13.0-15.4
Cardston	-	-	-	-	12.0	9.8-14.5	-	-	-	-	10.8	10.4-11.2	13.2	12.2-13.7	-	-
Study Area Total ¹	13.6	11.2-17.0	13.5	11.3-15.2	12.3	9.8-15.4	13.5	11.9-15.2	12.6	10.1-14.7	12.2	10.2-15.6	12.9	10.9-15.2	14.6	9.2-17.0
Province of Alberta	14.4	8.1-19.1	12.8	8.7-18.4	12.8	8.4-16.5	13.4	8.8-17.8	13.1	7.8-19.0	13.6	9.0-17.6	12.6	7.9-17.0	13.4	9.2-18.4

¹ Average weighted by number of samples.

Source: Canada Grain Commission.

Prairie Farm Assistance Act Payments 1939-1969

The map following (Figure D) shows a rough outline of the land tributary to each of the delivery points in the study area. The figures represent the number of times PFAA payments were made to producers because of crop failure. A value of eight for example does not mean that all farmers in that township received payments in eight years out of 31 but that some farmers did. Thus the map gives an indication of crop failure frequency in the study area.

The maximum number of times that payments were made to producers in any one township was 13. This was made in a township near the delivery point of Fort Macleod.

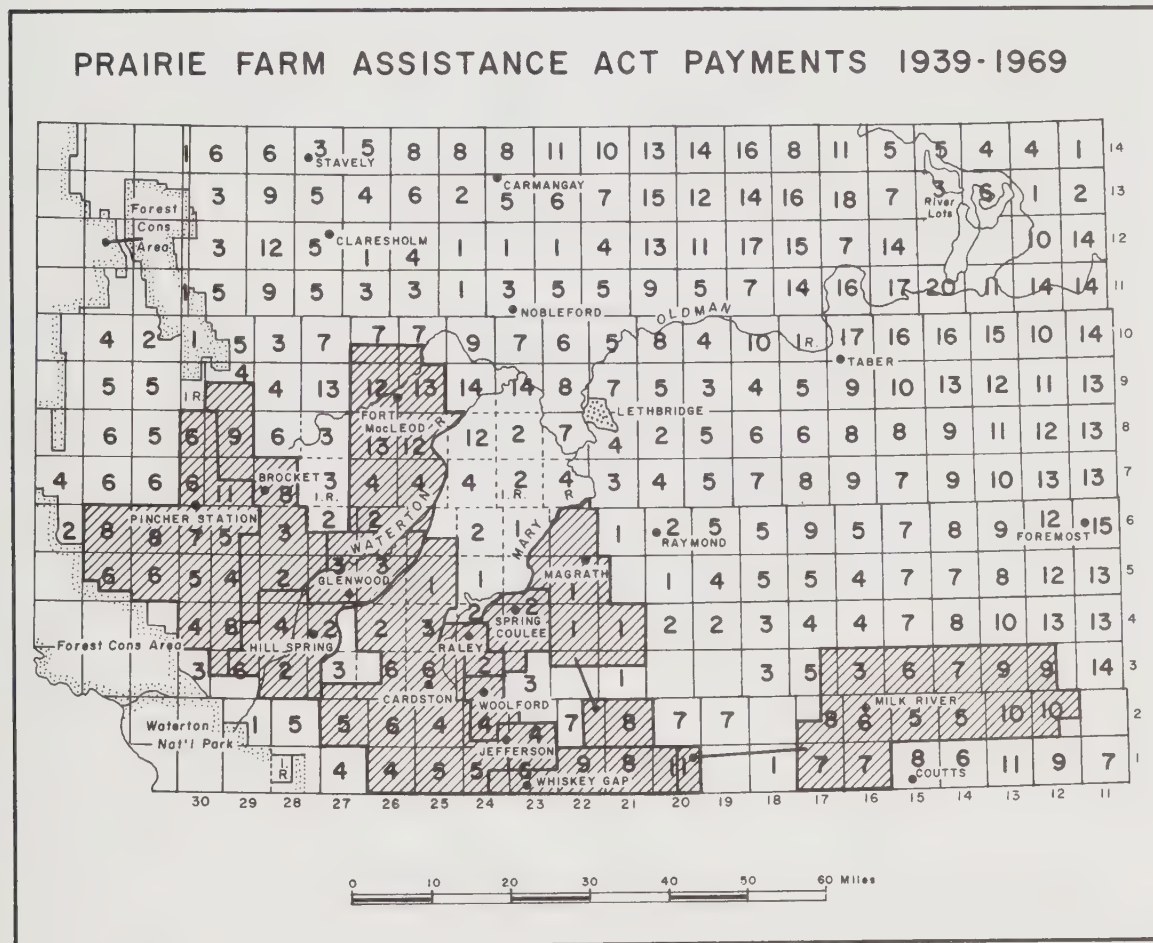


FIGURE D

Farm Size

The average size of farm (Table 20), in the study area was generally slightly larger in 1969-70 than in 1962-63, increasing from a mean of 752 acres in 1962-63 to 947 acres in 1969-70. All the delivery points with the exception of Jefferson had an increase in average or mean size. Raley showed the largest increase, from a mean of 1,377 acres in 1962-63 to 1,824 acres in 1969-70. The smallest increase of 107 acres was at Whiskey Gap. As the “number of farms” in this context is actually the number of grain delivery permits, it appears that some farms may have gone out of commercial grain production and are devoting their land to hay and pasture. This seems to be the case in the Jefferson hinterland rather than the general prairie trend, that of fewer but larger farms.

As a high shift at either end of the size scale can change the average farm size substantially (this occurred at Raley) the median size is perhaps a better indicator of farm size changes. The median size has half the number of farms smaller than it, and half larger. In the study area the median farm size increased from 505 acres to 640 acres. This means that in 1962-63 one half of the number of farms were less than 505 acres in size, whereas in 1969-70 the dividing line rose to 640 acres. As the median size as well as the mean size increased we can conclude that the number of large farms increased relative to the number of small farms.

The distribution of grain farm sizes in the Cardston study area is shown in Table 21. Size Groups are arranged in intervals of 159 acres such that 160, or a multiple of it, falls at the midpoint of each class size. Within size group, the greatest decrease in number of farms in the time period shown was in the 401 to 560 acres. Decreases in the number of farms were general in the first three size groups. Increases in the number of farms were general in the last seven size groups. This is shown in Figure E. The graph shows clearly that in 1962-63 there were more smaller farms in the study area than in 1969-70 and that there were fewer but larger farms in 1969-70 than in 1962-63.

TABLE 20. AVERAGE ACREAGE OF GRAIN FARMS IN THE STUDY AREA, 1962-63 AND 1969-70

Delivery Point	1962-63	1969-70
<i>Too Small to Classify</i>		
Raley		
Number of Farms	9	8
		— acres —
Mean	1,377	1,824
Maximum	7,534	10,229
Minimum	156	156
Median	631	636
Modal Size	No modal size	No modal size
Whiskey Gap		
Number of Farms	71	61
		— acres —
Mean	764	871
Maximum	2,560	3,090
Minimum	160	160
Median	635	653
Modal Size	480	480
<i>Hamlets</i>		
Jefferson		
Number of Farms	42	23
		— acres —
Mean	1,000	690
Maximum	4,553	2,219
Minimum	160	37
Median	640	320
Modal Size	640	320
Woolford		
Number of Farms	44	27
		— acres —
Mean	768	1,123
Maximum	5,979	7,099
Minimum	110	20
Median	624	667
Modal Size	640	640
Brocket		
Number of Farms	151	98
		— acres —
Mean	678	934
Maximum	3,828	11,439
Minimum	154	80
Median	505	640
Modal Size	160	640
<i>Villages</i>		
Spring Coulee		
Number of Farms	35	31
		— acres —
Mean	1,059	1,259
Maximum	2,822	4,298

(continued)

TABLE 20. (cont'd) AVERAGE ACREAGE OF GRAIN FARMS IN THE STUDY AREA, 1962-63 AND 1969-70

Minimum	279		73
Median	870		1,150
Modal Size	640		640
Pincher Station			
Number of Farms	179		149
		— acres —	
Mean	770		906
Maximum	6,656		7,616
Minimum	70		120
Median	480		635
Modal Size	320		480
Hill Spring			
Number of Farms	95		82
		— acres —	
Mean	568		729
Maximum	5,419		9,600
Minimum	39		10
Median	351		444
Modal Size	160		160
Glenwood			
Number of Farms	102		76
		— acres —	
Mean	586		847
Maximum	7,564		10,219
Minimum	20		20
Median	318		320
Modal Size	160		320
Towns			
Magrath			
Number of Farms	160		137
		— acres —	
Mean	845		977
Maximum	10,240		10,240
Minimum	17		30
Median	477		480
Modal Size	160		160
Greater Towns			
Milk River			
Number of Farms	249		217
		— acres —	
Mean	868		1,003
Maximum	7,340		7,360
Minimum	70		55
Median	720		800
Modal Size	320		800
Fort Macleod			
Number of Farms	200		189

(continued)

TABLE 20. (cont'd) AVERAGE ACREAGE OF GRAIN FARMS IN THE STUDY AREA, 1962-63 AND 1969-70

		— acres —	
Mean	723		904
Maximum	6,734		9,571
Minimum	67		40
Median	480		640
Modal Size	320		320
Cardston			
Number of Farms	195		162
		— acres —	
Mean	631		1,035
Maximum	6,461		9,545
Minimum	23		40
Median	400		640
Modal Size	320		320
Study Area Total			
Number of Farms	1,532		1,260
		— acres —	
Mean	752		947
Maximum	10,240		11,439
Minimum	17		10
Standard Deviation	886		1,203
Median	505		640
Modal Size	320		320

Source: Canadian Wheat Board.

DISTRIBUTION OF GRAIN FARM SIZES IN THE STUDY AREA, CROP YEARS 1962-63 AND 1969-70

NO. OF FARMS

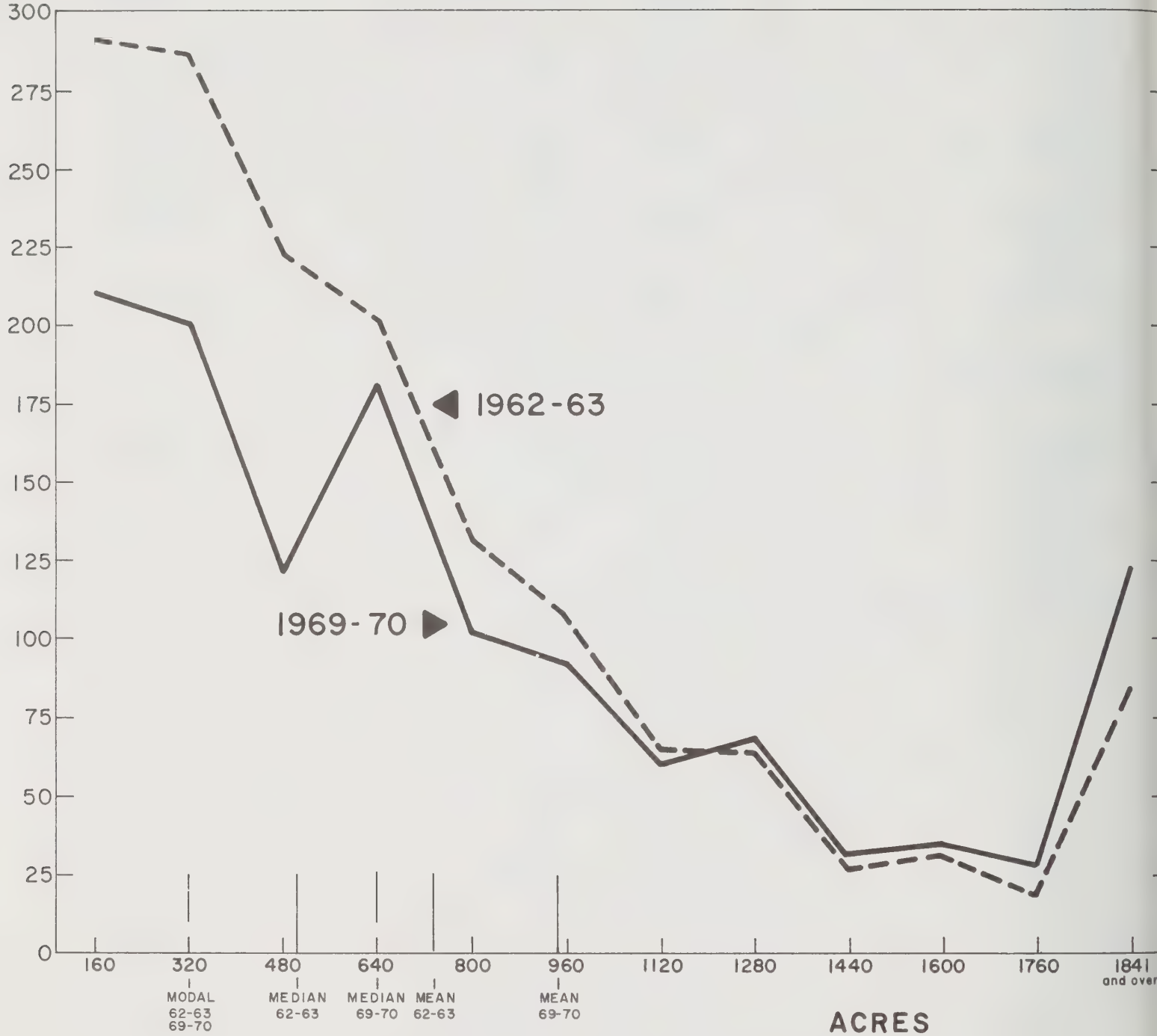


FIGURE E

TABLE 21. DISTRIBUTION OF GRAIN FARM SIZES IN THE STUDY AREA, CROP YEARS 1962-63 AND 1969-70

Size Group (Acres)	1962-63		1969-70	
	No. of Farms	Percent of Total	No. of Farms	Percent of Total
1 — 240	291	19.0	210	16.7
241 — 400	287	18.7	201	15.9
401 — 560	222	14.5	122	9.7
561 — 720	201	13.1	181	14.4
721 — 880	131	8.6	103	8.2
881 — 1,040	108	7.1	93	7.4
1,041 — 1,200	65	4.2	61	4.8
1,201 — 1,360	64	4.2	69	5.5
1,361 — 1,520	27	1.8	32	2.5
1,521 — 1,680	32	2.1	35	2.8
1,681 — 1,840	19	1.2	29	2.3
1,841 and Over	85	5.5	124	9.8
Study Area Total	1,532	100.0	1,260	100.0

Source: Canadian Wheat Board.

Land Tenure

In the Cardston region the general trend between 1962-63 and 1969-70 was for a greater proportion of land to be owned by the operator, rather than rented (Table 22). There was little difference in the proportion of land owned and rented over the time period. In 1962-63, 76 percent of the land was owned and 24 percent rented. In 1969-70, 75 percent was owned and 25 percent rented. The size of the elevator service centre appears to have little significant effect upon the distribution of the land between ownership and rental basis.

TABLE 22. LAND TENURE OF GRAIN FARMS IN THE STUDY AREA, BY DELIVERY POINT, 1962-63 AND 1969-70

Delivery Point	1962-63		1969-70	
	Owned	Rented	Owned	Rented
— percent —				
<i>Too Small to Classify</i>				
Raley	61.7	38.3	74.4	25.6
Whiskey Gap	81.8	18.2	87.2	12.8
<i>Hamlets</i>				
Jefferson	81.7	18.3	100.0	0.0
Woolford	78.3	21.7	65.0	35.0
Brocket	75.8	24.2	78.0	22.0
<i>Villages</i>				
Spring Coulee	52.7	47.3	58.4	41.6
Pincher Station	82.9	17.1	77.2	22.8
Hill Spring	87.8	12.2	84.6	15.4
Glenwood	81.6	18.4	74.8	25.2
<i>Towns</i>				
Magrath	80.9	19.1	81.2	18.8
<i>Greater Towns</i>				
Milk River	70.3	29.7	72.4	27.6
For Macleod	73.6	26.4	78.7	21.3
Cardston	67.9	32.1	61.6	38.4
Study Area Total	75.6	24.4	74.9	25.1

Source: Canadian Wheat Board.

PART III

GRAIN MARKETING CHARACTERISTICS

Alternate Delivery Points Chosen by Producers, 1970-71

One of several important innovations introduced in the Canadian Wheat Board's system of grain marketing in 1970-71 was the right given to producers to nominate a second official delivery point. Thus, for the first time, it is possible to speculate on the reasoning underlying the choice of an alternate point should the individual producer's basic point be closed or otherwise inaccessible.

Table 23 contains an analysis of the data concerning the choice of 1,179 producers in the study area. One quarter of them did not exercise their option of naming a second point, although most producers delivering to elevators in the small communities did. Farmers who haul their grain to larger centres showed less inclination to rely on an alternative point. Fifty-five percent of Fort Macleod customers did not bother to select an alternative. Their reasoning is perhaps obvious. Less obvious is the reason why 57 percent of the farmers in the Hill Spring area failed to select a second point.

The majority of producers (60 percent) chose the next nearest elevator, especially those in the smaller communities. If considered as a proportion of those producers who did make a second choice the percentages are greater, of course. Eighty percent of second choices went to the next nearest elevator.

On the basis of loading blocks, a different one did not appear to offer any attraction as only $7\frac{1}{2}$ percent of the producers chose to move to a new loading block. It could be considered that selecting points on two different blocks might offer more flexible marketing opportunities, but this factor did not prove to be significant. Those who did nominate a point on a different block may have done so for other reasons. For instance, points such as Medicine Hat might well be chosen because of other factors.

Many producers chose larger centres for their alternative, despite the fact that they would pass several other elevators en route to the bigger community. Thirty percent of those farmers normally hauling to a small elevator point chose a large point as their alternate. Few of those delivering to a greater town chose another greater town as their second point.

Because of the difficulty in determining the elevator company of each farmer's choice no attempt was made to analyze this factor. It is readily admitted, however, that a farmer's loyalty to a company may be quite a powerful factor in reaching his decision.

TABLE 23. ALTERNATE DELIVERY POINTS CHOSEN BY PRODUCERS, 1970-71

Basic Delivery Point	Number of Farmers	Option not Exercised	Next Nearest Elevator	Same Loading Block	Different Loading Block	Greater Town or City ¹
— percent of number of farmers —						
<i>Too Small to Classify</i>						
Raley	8	0.0	100.0	100.0	0.0	87.5
Whiskey Gap	55	3.6	34.5	96.4	0.0	21.8
Total	63	3.1	42.9	96.9	0.0	30.2
<i>Hamlets</i>						
Jefferson	22	0.0	54.5	100.0	0.0	45.4
Woolford	27	14.8	85.2	85.2	0.0	33.3
Brocket	93	1.1	88.1	80.6	18.3	10.7
Total	142	3.5	82.4	84.5	12.0	20.4
<i>Villages</i>						
Spring Coulee	30	30.0	60.0	66.7	3.3	9.9
Pincher Station	137	1.5	89.1	90.5	8.0	2.2
Hill Spring	77	57.2	36.4	27.2	15.6	23.4
Glenwood	69	16.0	84.0	62.3	21.7	79.7
Total	313	21.2	72.2	66.4	12.4	25.2
<i>Towns</i>						
Magrath	131	6.1	90.1	93.9	0.0	3.0
<i>Greater Towns</i>						
Milk River	218	23.9	61.9	75.6	0.5	2.3
Fort Macleod	175	54.9	31.4	29.7	15.4	12.7
Cardston	137	46.0	23.3	51.1	2.9	2.9
Total	530	39.8	41.9	54.2	6.0	5.8
Study Area Total	1,179	24.8	60.2	67.8	7.4	13.8

¹Milk River, Fort Macleod, Cardston, Raymond, Taber, Lethbridge, or Medicine Hat.

Source: Canadian Wheat Board.

Delivery Permit Books Issued

The number of permit holders decreased from 1,532 in 1962-63 to 1,246 in 1969-70 (Table 24). None of the communities listed in the study area showed an increase in the number of permit books issued. Proportionately the smaller communities lost more than the larger communities.

TABLE 24. DELIVERY PERMIT BOOKS ISSUED, BY DELIVERY POINT, 1962-63 TO 1969-70

Delivery Point	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70
<i>Too Small to Classify</i>								
Raley	9	9	9	8	8	8	8	8
Whiskey Gap	71	62	65	63	62	61	61	61
<i>Hamlets</i>								
Jefferson	42	41	42	37	37	27	35	23
Woolford	44	37	37	36	32	27	26	27
Brocket	151	147	139	129	115	106	107	98
<i>Villages</i>								
Spring Coulee	35	34	32	33	32	31	32	31
Pincher Station	179	169	168	169	158	152	151	149
Hill Spring	95	99	95	96	97	84	85	82
Glenwood	102	99	94	92	94	83	79	76
<i>Towns</i>								
Magrath	160	159	152	154	150	147	143	137
<i>Greater Towns</i>								
Milk River	249	241	248	243	231	222	216	217
Fort Macleod	200	198	196	189	182	177	178	189
Cardston	195	153	143	144	116	96	125	162
Study Area Total	1,532	1,448	1,420	1,393	1,314	1,221	1,246	1,260

Source: Canadian Wheat Board.

Canadian Wheat Board Initial Payments

Table 25 accompanies Figures F and G. They present data of Canadian Wheat Board street prices (initial payments) to producers for a selected set of grades of grains merchandized by the Canadian Wheat Board.

Wheat delivered by the producers in the study area to the Canadian Wheat Board's agents, i.e., the country elevator companies, is eligible for an initial payment based on a value in store Vancouver. To arrive at the street prices for the various grades of wheat and durum, a deduction is made to cover the freight to the terminals at the Pacific Coast and the storage charge at the country elevator. Thus the freight rate zone in which the elevator is situated is instrumental in determining the street price paid. The two zones in the study area are shown in Figure F.

On the other hand, oats and barley delivered to the country elevators in the Cardston region are paid for at a rate based on a value in store Thunder Bay. From this value there is deducted the country elevator charge and the freight to Thunder Bay. This is so regardless of where the oats and barley are destined. Figure G maps the freight rates for the thirteen points under examination in this study.

It will be noted from Table 25 that the initial payments are not necessarily constant from year to year. Indeed even in the three years for which prices are listed there are differences in the same grade. Furthermore, from time to time adjustments are made in the set initial payments during a pool period. Such was the case for barley in 1970-71. The year began with the payments for barley at the same level as in 1969-70, but part way through the year it was deemed to be advisable to raise these prices. A 10¢ per bushel of barley increase resulted in the initial payment for No. 3 C.W. 6-Row moving to $83\frac{1}{4}$ ¢ per bushel for delivery points in the 25¢ per cwt freight rate zone. Corresponding increases resulted in the other grades and other zones.

TABLE 25. CANADIAN WHEAT BOARD NET INITIAL PAYMENTS TO PRODUCERS, "STREET PRICES", CROP YEARS, 1968-69, 1969-70 AND 1970-71

Crop year	Grain Freight Rates ¹		Wheat		No. 2 C.W. Oats	No. 1 Feed Oats	No. 3 C.W. 6 Row Barley	No. 1 Feed Barley
	Pacific Exports	Lakehead ²	No. 1 Northern & No. 1 C.W.A.D.	No. 2 Northern & No. 2 C.W.A.D.				
			— ¢/cwt —					
			— dollars per bushel —					
1968-69	22	25	1.51 1/4	1.47 1/4	.52 1/4	.47 1/4	.88 1/2	.79 1/2
	23	26	1.50 1/2	1.46 1/2	.51 7/8	.46 7/8	.88	.79
1969-70	22	25	1.31	1.27	.47	.42	.73 1/4	.63 1/4
	23	26	1.30 1/4	1.26 1/4	.46 5/8	.41 5/8	.72 3/4	.62 3/4
1970-71	22	25	1.31	1.27	.47	.42	.83 1/4	.73 1/4
	23	26	1.30 1/4	1.26 1/4	.46 5/8	.41 5/8	.82 3/4	.72 3/4

¹ Flaxseed and Rapeseed 1 1/2 cents per hundredweight higher.²Oats and Barley quoted Lakehead only.

Source: Canadian Wheat Board.

GRAIN FREIGHT RATES TO PACIFIC COAST TERMINAL PORTS, CARDSTON REGION

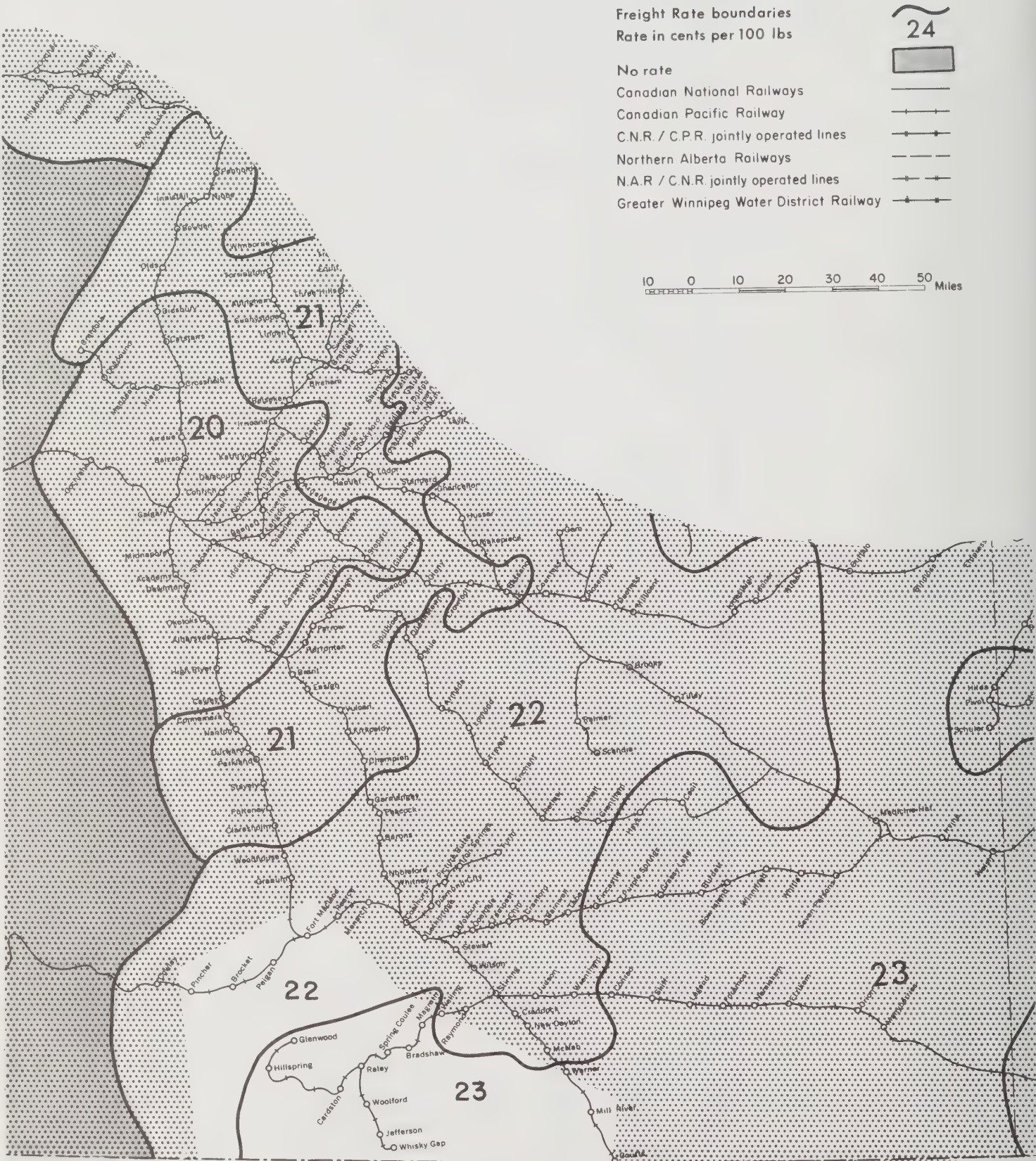
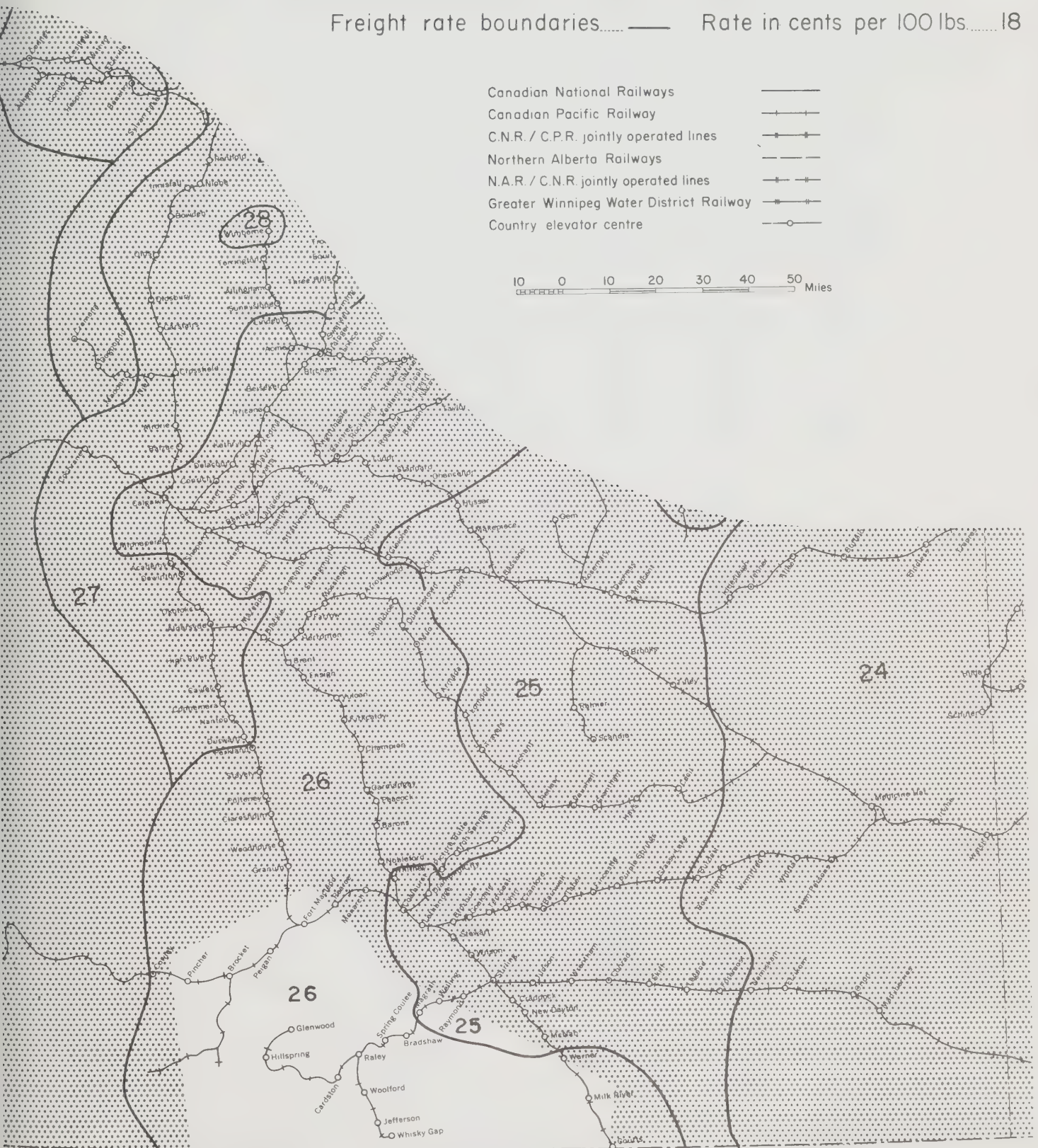


FIGURE F

GRAIN FREIGHT RATES TO THUNDER BAY FOR THE CARDSTON REGION

Freight rate boundaries..... Rate in cents per 100 lbs..... 18



Owner, Age and Capacity of Country Elevators

Table 26 presents data concerning who owns the country elevators at each point in the study area, when the elevators and their annexes were erected, and what storage capacity each has.

The average age of the elevators is 37 years and of the annexes, 35 years. The oldest licensed elevator is at Raley. It was constructed in 1905. Frequently older elevators are converted into annexes. Thus it will be noted that some annexes ante-date the elevator. Such is the case at Magrath where one of the annexes was built in 1908 and at Fort Macleod where an annex was built in 1907.

Of the 41 licensed country elevators in the study area, seven were opened in 1929, the biggest construction year in the region. The two most recently constructed elevators were built in 1970 at Milk River to replace three destroyed by fire. The peak of annex construction occurred in 1940-41, to accommodate the back-up of grain that occurred due to wartime restricted markets.

The data on ownership refer to elevators licensed as of August 1, each year. In early 1972 the Alberta Wheat Pool purchased all the elevators owned by Federal Grain Ltd. in Alberta. In the Cardston study region there were nine licensed elevators transferred to Alberta Wheat Pool. Following this takeover only the Wheat Pool is represented in five of the thirteen delivery points.

At August 1, 1970 there were 41 elevators licensed in the study area. This was 8 less than in 1962. Nevertheless the capacity was little changed, totalling 4,769,000 bushels in 1962 and 4,725,000 in 1971. The point with the greatest storage capacity is Milk River, with six elevators totalling 1,188,000 bushels.

TABLE 26. COUNTRY ELEVATORS, OWNER, AGE, AND CAPACITY, BY DELIVERY POINT, 1962-63 AND 1971-72

Delivery Point	Company	Year of Construction		Storage Capacity*		
		Elevator	Annex	1962-63	1971-72	
— '000 bu. —						
<i>Too Small to Classify</i>						
Raley	Alta.Pac.Gr.Co.1943 Ltd.#1	1912	1940	47	—	
	Alta.Pac.Gr.Co.1943 Ltd.#2	1905	1940	47	—	
Whiskey Gap	Federal Grain Ltd.#1	1912	1940	—	closed	
	Federal Grain Ltd.#2	1905	1940	—	closed	
	Alberta Wheat Pool	1929	1941	76	76	
	Alta.Pac.Gr.Co.1943 Ltd	1929	1932	48	—	
	Federal Grain Ltd.#1	1929	1932	—	48	
	United Grain Growers Ltd	1929	1940	60	—	
	Federal Grain Ltd.#2	1929	1940	—	60	
<i>Hamlets</i>						
Jefferson	Alberta Wheat Pool	1929	1940	69	69	
	United Grain Growers Ltd.#1	1928	1940	57	closed	
	Alta.Pac.Grain Co.1943 Ltd.	1929	1941	80	—	
	United Grain Growers Ltd.#2	1929	1941	—	closed	
Woolford	Alberta Wheat Pool	1948	1949	100	100	
	Alta.Pac.Gr.Co.1943 Ltd.	1923	1940	89	—	
	Federal Grain Ltd.	1923	1940	—	87	
	Brocket	Alberta Wheat Pool	1929	1940	111	111
Brocket	United Grain Growers Ltd.#1	1927	1956	103	148	
	Alta.Pac.Gr.Co.1943 Ltd.	1918	1953	83	—	
	United Grain Growers Ltd.#2	1918	1941	—	83	
	Villages					
	Spring Coulee	Alberta Wheat Pool	1931	1955	101	148
		Alta.Pac.Gr.Co.1943 Ltd.#1	1932	1940	67	—
		Federal Grain Ltd.#1	1932	1940	—	67
Alta.Pac.Gr.Co.1943 Ltd.#2		1916		23	—	
Federal Grain Ltd.#2		1916		—	23	
Pincher Station		Alberta Wheat Pool #1	1928	1940	70	70
Alberta Wheat Pool #2		1936	1940	51	44	
Pincher Station	United Grain Growers Ltd.	1926	1940	94	125	
	Hill Spring	Alberta Wheat Pool #1	1926	1926	67	95
			1940			

(continued)

TABLE 26. COUNTRY ELEVATORS, OWNER, AGE, AND CAPACITY, BY DELIVERY POINT, 1962-63 AND 1971-72 (continued)

Delivery Point	Company	Year of Construction		Storage Capacity*	
		Elevator	Annex	1962-63	1971-72
— '000 bu. —					
Hill Spring	Alberta Wheat Pool #2	N.A.		28	—
	Alta.Pac.Gr.Co.1943 Ltd.	1927	1950	65	—
	Federal Grain Ltd.	1927	1950	—	65
Glenwood	Alberta Wheat Pool #1	1927	1950	74	74
	Alberta Wheat Pool #2	1928	1940	54	54
	United Grain Growers Ltd. #1	1928	1948	62	62
	Alta.Pac.Gr.Co.1943 Ltd.	1928	1948	63	—
	United Grain Growers Ltd. #2	1928	1948	—	63
<i>Towns</i>					
Magrath	Alberta Wheat Pool #1	1953	1917	87	144
			1948		
	Alberta Wheat Pool #2		57	—	
	Alberta Wheat Pool #3	1929	1908	87	—
			1940		
			1940		
			1940		
	Alberta Wheat Pool #2	1929	1908	—	87
			1940		
			1940		
	Alta.Pac.Gr.Co.1943 Ltd.	1937	1940	151	—
			1940		
			1959		
	Federal Grain Ltd.	1937	1940	—	151
			1940		
	Ellison Mlg.& Elev.Co.Ltd.	1917	1917	142	142
			1939		
			1940		
	Parrish & Heimbecker Ltd.	1918	1954	150	162
			1928		
			1941		
			1951		
			1955		
1960					
<i>Greater Towns</i>					
Milk River	Alberta Wheat Pool #1	1970	1970	144	170
			1970		
	Alberta Wheat Pool #2	1961	1939	162	162
			1961		
	Alberta Wheat Pool #3	1928	1940	95	95
			1951		
	Alta.Pac.Gr.Co.1943 Ltd.		201	—	

(continued)

TABLE 26. COUNTRY ELEVATORS, OWNER, AGE, AND CAPACITY, BY DELIVERY POINT, 1962-63 AND 1971-72 (continued)

Delivery Point	Company	Year of Construction		Storage Capacity*	
		Elevator	Annex	1962-63	1971-72
— '000 bu. —					
Milk River	Ellison Mlg.& Elev.Co.Ltd.	1942	1943	142	142
			1948		
	Milk River Grain Ltd.	1957-58	1956	365	365
			1956		
			1956		
Fort Macleod	United Grain Growers Ltd.	1970	1940	289	254
	Alberta Wheat Pool	1964	1927	107	212
			1940		
			1969		
	Alta.Pac.Gr.Co.1943 Ltd.	1918	1907	124	—
			1940		
			1956		
	Federal Grain Ltd.	1918	1907	—	124
			1940		
			1956		
	United Grain Growers Ltd.#1	1926	1929	102	100
			1940		
			1953		
	United Grain Growers Ltd.#2	1927	1939	77	74
			1940		
			1940		
Cardston	Alberta Wheat Pool #1	1929	1940	110	110
			1954		
	Alberta Wheat Pool #2	1969	1969	88	170
			1969		
	Ellison Mlg.& Elev.Co.Ltd.	1926	1926	113	113
			1940		
			1941		
	Alta.Pac.Gr.Co.1943 Ltd.	1967	1924	115	—
			1941		
			1948		
	Federal Grain Ltd.	1967	1924	—	150
			1941		
			1948		
	United Grain Growers Ltd.	1967	1918	74	126
			1940		

Source: Canada Grain Commission.

Receipts of Grain at Country Elevators

The volume of grain taken into the elevators at a particular delivery point is a measure of that point's relative importance in the grain collection system. Table 27 shows the receipts of all grains at each point for crop years 1962-63 to 1969-70, together with the ten-year average for the thirteen points in the study area. The ten-year average ranges from 98,000 bushels at Raley to 1,401,000 bushels at Milk River, the only million bushel point in the study area.

By groups of points a correlation will be noted between the volume received and the status of the groups. Thus hamlets tend to handle less grain than do villages, and villages less than towns, and so on. This is not so when the comparison is made between each individual point in a group and each point in another group. For instance, the hamlet of Brocket received an average of 389,000 bushels while the village of Hill Spring took in only 147,000 bushels on the average. The town of Magrath put through an average of 638,000 bushels while Cardston, a greater town, handled only 487,000 bushels.

Receipts vary considerably from year to year, reflecting such things as the ultimate quota levels, which depend on marketing volume.

TABLE 27. RECEIPTS OF GRAIN AT LICENSED COUNTRY ELEVATORS BY GRAIN DELIVERY POINT, 1962-63 TO 1969-70 AND TEN-YEAR AVERAGE

Delivery Point	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70	10-year Average
— '000 bushels —									
<i>Too Small to Classify</i>									
Raley	86	124	105	155	156	81	78	76	98
Whiskey Gap	182	245	233	272	328	172	208	218	208
<i>Hamlets</i>									
Jefferson	144	220	169	170	226	76	157	108	150
Woolford	176	223	211	168	248	147	150	206	177
Brocket	353	524	482	532	582	330	397	400	389
<i>Villages</i>									
Spring Coulee	245	318	264	310	386	227	290	354	250
Pincher Station	245	432	351	414	487	287	411	424	314
Hill Spring	142	192	165	189	199	151	196	222	147
Glenwood	420	499	496	530	635	321	351	386	406
<i>Towns</i>									
Magrath	614	638	771	895	948	584	608	743	638
<i>Greater Towns</i>									
Milk River	1,060	928	1,690	1,810	2,393	1,360	1,405	1,529	1,401
Fort Macleod	406	546	640	701	995	646	807	1,012	583
Cardston	441	583	573	631	693	390	561	870	487
Study Area Total	4,514	5,472	6,150	6,777	8,276	4,772	5,619	6,548	5,248

Source: Canada Grain Commission.

The excellent export year 1966-67 was the high point for farm deliveries during the period (1962-63 to 1969-70) covered in Table 27. In the study area that year, 8,276,000 bushels went through the thirteen points. This was much greater than any other crop year in the period and undoubtedly was an all-time record high. The 1962-63 crop year was the low point in the eight years shown. Only 4,514,000 bushels were handled that year. The amount of livestock feeding in the area also plays a part in determining how much or how little grain is delivered to country elevators.

Through-Put Ratios

The through-put ratio is the total number of bushels received by a delivery point in one year divided by its total bushel storage capacity. The ratio represents one measure of efficiency of the grain elevator. Table 28 shows the actual through-put ratio for the thirteen points in the Cardston area for the crop years 1962-63 and 1969-70, together with the ten-year average. The ten-year average is based on average annual receipts over the past ten years divided by the 1969-70 storage capacity. The minimum ratio in 1962-63 was .70 at Jefferson and the highest for that year, 1.66, was at Glenwood. In 1969-70, the minimum ratio was .52 at Jefferson and the maximum ratio was 1.98 at Fort Macleod.

TABLE 28. THROUGH-PUT RATIOS BY DELIVERY POINT, 1962-63, 1969-70 AND PREVIOUS TEN-YEAR AVERAGE

Delivery Point	1962-63	1969-70	Ten-Year Average 1960-61 to 1969-70
<i>Too Small to Classify</i>			
Raley	.91	.83	1.07
Whiskey Gap	.99	1.18	1.13
<i>Hamlets</i>			
Jefferson	.70	.52	.73
Woolford	.93	1.10	.95
Brocket	1.19	1.17	1.14
<i>Villages</i>			
Spring Coulee	1.28	1.49	1.05
Pincher Station	1.14	1.77	1.31
Hill Spring	.89	1.39	.92
Glenwood	1.66	1.52	1.61
<i>Towns</i>			
Magrath	.91	1.10	.93
<i>Greater Towns</i>			
Milk River	.76	1.56	1.18
Fort Macleod	.99	1.98	1.14
Cardston	.88	1.30	.73

Source: Canadian Wheat Board.

Canadian Wheat Board Specified Acreage

Because specified acreage is the only series depicting change in the delivery quota acreages base over a number of years, it has been retained in this report, despite its having been discarded as a technique by the Canadian Wheat Board. This series yields some meaningful information concerning the effect of changing market conditions on quota acreage, when read in conjunction with certain other tables in this report.

“Specified acres” was the total acres devoted to wheat, oats, barley, rye, summerfallow, cultivated pasture and forage crops. Durum was usually included also, but it was not part of the specified acreage in the 1962-63 crop year. Oilseeds, native pasture, unimproved farm land, etc., never formed part of the quota base for cereal grains.

Table 29 is an 8-year series running from 1962-63 to 1969-70 showing the changes through this period. There was a 13 percent increase in the quota acreage over this period in the study area as a whole. In general the smaller points declined in acreage while the larger ones increased. Raley, a very small point on the edge of the St. Mary’s Reservoir, actually experienced an increase of 21 percent. Summerfallow in the Raley hinterland decreased but barley acreage doubled. Forage crops almost tripled, effecting the noted net increase. On the other hand, Jefferson, located in ranching country south of Cardston, showed a 62 percent decrease in specified acreage quota. This reflects the drop in the number of delivery permits issued (see Table 24), the decline being 52 percent. The largest decrease occurred in summerfallow, where Jefferson farmers reported 10,836 acres in 1962-63 but only 3,540 acres in 1969-70. The largest upward movement in the number of specified acres tributary to a delivery point was recorded in Cardston, where a rise of 59 percent occurred.

TABLE 29. CANADIAN WHEAT BOARD SPECIFIED ACREAGE FOR DELIVERY QUOTA PURPOSES, BY DELIVERY POINT, 1962-63 TO 1969-70

Delivery Point	1962-63 ¹	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70	Percent of Change 1963-63 to 1969-70
— acres —									
<i>Too Small to Classify</i>									
Raley	11,298	11,647	11,657	11,729	13,466	13,466	13,458	13,669	+ 21.0
Whiskey Gap	33,432	32,973	33,793	34,838	34,678	34,149	34,129	33,877	+ 1.3
<i>Hamlets</i>									
Jefferson	30,015	31,472	31,519	31,555	29,641	21,360	26,063	11,400	- 62.0
Woolford	25,709	25,658	24,633	22,923	22,391	22,399	22,353	22,409	- 12.8
Brocket	64,649	64,121	71,514	66,746	61,308	61,911	64,798	64,071	- 0.9
<i>Villages</i>									
Spring Coulee	30,947	32,496	31,421	31,306	33,804	37,282	35,513	35,385	+ 14.3
Pincher Station	69,768	65,854	70,162	73,799	80,207	74,262	76,230	80,609	+ 15.5
Hill Spring	31,049	31,233	32,410	33,969	35,768	33,736	34,751	38,692	+ 24.6
Glenwood	49,929	49,733	50,143	54,427	66,657	60,933	51,806	48,994	- 1.9
<i>Towns</i>									
Magrath	92,812	92,755	92,915	95,750	95,973	97,934	101,690	101,660	+ 9.5
<i>Greater Towns</i>									
Milk River	168,578	187,039	189,326	186,993	192,235	189,141	185,201	181,079	+ 7.4
Fort Macleod	90,394	103,216	99,927	101,943	105,784	106,080	109,795	121,027	+ 33.9
Cardston	77,535	73,777	77,033	79,551	63,327	73,872	92,834	123,477	+ 59.2
Study Area Total	776,115	801,974	816,453	825,529	835,239	826,525	848,621	876,349	+ 12.9

¹ Durum excluded from specified acreage.

Source: Canadian Wheat Board.

Specified Acres Devoted to Canadian Wheat Board Grains

Table 30 presents a short time series of acreage devoted to “Board grains”, i.e., wheat, durum, oats and barley. The percentage that these grains as a group are of total seeded and summerfallow acres is included in this table. These data demonstrate that producers tend to vary their plantings from year to year, depending on their collective judgment as to the relative saleability of the various grains and oilseeds in the ensuing marketing year.

Board grains were 47 percent of cultivated acres in 1963 but rose to 59 percent in 1968. Glenwood was the only area in the whole Cardston region where Board grains were never less than half total seeded and fallow acres. Cardston itself showed the greatest variance, moving from a low of 45 percent in 1963 to 69 percent in 1968. Whiskey Gap was relatively constant at about 48 percent.

TABLE 30. NUMBER AND PERCENT OF SPECIFIED ACRES DEVOTED TO CANADIAN WHEAT BOARD GRAINS¹, BY DELIVERY POINT, 1963-64 TO 1969-70

Delivery Point	Board Grains 1963-64		Board Grains 1964-65		Board Grains 1965-66		Board Grains 1966-67		Board Grains 1967-68		Board Grains 1968-69		Board Grains 1969-70	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
<i>Too Small to Classify</i>														
Raley	5,573	47.8	5,933	40.9	6,197	52.8	7,191	53.4	7,592	56.4	8,079	60.0	8,381	61.3
Whiskey Gap	14,917	45.2	16,705	49.4	16,631	47.7	17,428	50.2	15,913	46.6	17,304	50.7	16,463	48.6
<i>Hamlets</i>														
Jefferson	14,313	45.5	15,283	48.5	17,603	55.8	16,931	57.1	8,857	41.5	16,589	63.6	6,124	53.7
Woodford	12,264	47.8	12,727	51.7	11,786	51.4	12,601	56.3	9,959	44.5	13,310	59.5	12,560	56.0
Brocket	30,913	48.2	34,629	48.4	34,243	51.3	33,108	54.0	27,774	44.9	38,664	59.7	34,003	53.1
<i>Villages</i>														
Spring Coulee	14,676	45.2	16,592	52.8	16,516	52.8	19,442	57.5	20,733	55.6	22,562	63.5	21,686	61.3
Pincher Station	29,346	44.6	31,786	45.3	33,651	45.6	40,103	50.0	28,615	38.5	40,997	53.8	37,295	46.3
Hill Spring	14,254	45.6	16,275	50.2	17,975	52.9	18,060	50.5	12,912	38.3	20,516	59.0	17,691	45.7
Glenwood	24,876	50.0	28,541	56.9	34,222	62.9	41,846	62.8	39,087	64.1	34,636	66.8	30,785	62.8
<i>Towns</i>														
Magrath	43,999	47.4	47,488	51.1	50,020	52.2	51,874	54.0	50,350	51.4	57,592	56.6	55,287	54.4
<i>Greater Towns</i>														
Milk River	89,736	48.0	99,096	52.3	94,631	50.6	101,412	52.8	96,266	50.9	100,657	54.4	90,995	50.2
Fort Macleod	49,074	47.5	51,904	51.9	52,069	51.5	54,378	51.4	54,747	51.6	62,849	57.2	62,375	51.5
Cardston	33,346	45.2	40,636	52.8	42,548	53.5	35,036	55.3	35,716	48.3	63,741	68.7	77,601	62.8
Study Area Total	377,287	47.0	417,595	51.1	428,092	51.8	449,410	53.8	408,521	49.4	497,496	58.6	471,246	53.8

¹ Board Grains are: Wheat, Durum, Oats and Barley.

Source: Canadian Wheat Board.

Quota Acres as a Percent of Seeded Acres

As part of the federal government’s Wheat Acreage Reduction Program (Operation Lift) in 1970-71, the Canadian Wheat Board changed the quota base regulations. This entailed a shift from specified acres (see Table 28) to quota acres, which comprises seeded acreage plus acres assigned by each permit holder to the kind of grains he wished to deliver during the crop year 1970-71. A similar scheme was in force in 1971-72, a main difference being that the farmer could not use his acreage seeded to wheat in his 1970-71 quota base but he could do so in 1971-72. A fuller description of the new technique may be found in the Report on the Neepawa Region, No. 8 in this series.

Tables 31 and 32 show the number of acres seeded to the major grains in the farm hinterlands of the specified delivery points. They also show the number of quota acres for each point, and the relationship of the two acreages on a percentage basis.

In the whole Cardston study area in 1970-71, the number of acres assigned to wheat, for delivery quota purposes, was nearly four times (370 percent) the seeded acres. This would indicate a fairly large build up of farm stocks of wheat that the producers in the region wished to reduce by delivering it to the Canadian Wheat Board.

On the other hand, the oats producers had no problem of surplus stocks, because they showed little difference between their seeded acres and their quota acres. As a grain crop oats, of course, easily lends itself to feeding on the farm or sale to neighbours for feeding. Barley seemed to be somewhat in greater supply or perhaps the producers in this study area wished to market a bigger proportion than usual of their 1970 barley crop. In any case they chose to boost their quota acres from 176,500 seeded to 219,159 by assigning the difference to barley. As for flaxseed there was virtually no assignment of acreage to this crop's quota except at Spring Coulee, Glenwood and Milk River.

About the same percentage increase in wheat (363 percent vs 370 percent) was noted in 1971-72, but less barley (124 percent vs 106 percent). Collectively the flaxseed producers assigned enough acreage to boost their quota from 8,500 seeded acres to 13,800 quota acres. Surprisingly, on the other hand, rapeseed growers lowered their quota acres from 28,000 acres to 24,800. It may be that these producers were counting on a high bushel figure per quota acre to clear their rapeseed production.

As a guide to how much to assign to each kind of grain the Canadian Wheat Board had announced prior to seeding time that the minimum quota levels at the end of the crop year would be: wheat, 8 to 10 bushels per quota acre; oats, 7 or 8 bushels; barley 15 to 20.

TABLE 31. MAJOR GRAINS: QUOTA ACRES AS A PERCENT OF SEEDED ACRES, BY DELIVERY POINT, 1970-71

Delivery Point	Wheat				Oats				Barley				Flaxseed			
	Seeded		Quota		Seeded		Quota		Seeded		Quota		Seeded		Quota	
				Quota X 100 Seeded				Quota X 100 Seeded				Quota X 100 Seeded				Quota X 100 Seeded
<i>Too Small to Classify</i>																
Raley	2,234	5,541	248		234	234		100	2,947	3,081		105	655	655		100
Whiskey Gap	4,676	16,994	363		1,177	1,177		100	6,588	6,947		105	211	211		100
<i>Hamlets</i>																
Jefferson	95	2,691	2833		390	390		100	3,616	7,372		204	-	-		-
Woolford	1,342	9,716	724		682	682		100	5,415	7,551		139	349	349		100
Brocket	10,055	29,441	293		5,847	5,861		100	9,653	13,643		141	1,110	1,110		100
<i>Villages</i>																
Spring Coulee	3,520	13,236	376		538	538		100	11,910	14,918		125	1,626	1,926		118
Pincher Station	6,399	28,758	449		6,298	6,404		102	14,991	19,610		131	227	227		100
Hill Spring	2,058	7,171	348		2,252	2,886		128	8,624	12,901		150	110	110		100
Glenwood	3,508	14,777	421		1,752	1,752		100	7,689	10,954		142	1,836	2,013		110
<i>Towns</i>																
Magrath	13,490	49,925	370		3,609	3,609		100	22,135	25,554		115	2,893	2,942		102
<i>Greater Towns</i>																
Milk River	32,259	123,171	382		4,546	4,546		100	28,104	29,499		105	7,034	8,018		114
Fort Macleod	19,497	61,952	318		5,984	6,058		101	19,948	21,933		110	3,889	3,889		100
Cardston	11,223	45,093	402		3,541	3,541		100	34,880	45,196		130	2,793	2,793		100
Study Area Total	110,356	408,466	370		36,850	37,678		102	176,500	219,159		124	22,733	24,243		107
Provincial Total	2,865,276	9,986,590	349		2,352,903	2,633,425		112	5,015,477	7,092,788		141	617,449	687,423		111

Source: Canadian Wheat Board.

TABLE 32. MAJOR GRAINS: QUOTA ACRES AS A PERCENT OF SEEDED ACRES, BY DELIVERY POINT, 1971-72

Delivery Point	Wheat			Barley			Flaxseed			Rapeseed		
	Seeded	Quota	Quota X 100 Seeded	Seeded	Quota	Quota X 100 Seeded	Seeded	Quota	Quota X 100 Seeded	Seeded	Quota	Quota X 100 Seeded
<i>Too Small to Classify</i>												
Raley	Closed											
Whiskey Gap	5,153	13,773	267	7,405	12,779	173	-	-	-	-	-	-
<i>Hamlets</i>												
Jefferson	395	1,255	318	4,874	7,533	155	-	-	-	-	-	-
Woolford	967	4,160	430	5,216	8,445	162	280	500	179	1,104	1,694	153
Brocket	10,722	37,531	350	9,983	12,489	125	663	753	114	1,501	1,395	93
<i>Villages</i>												
Spring Coulee	3,742	16,270	435	15,965	14,809	93	100	475	475	3,579	3,200	89
Pincher Station	9,584	39,737	415	14,216	18,031	127	-	20	-	145	100	69
Hill Spring	2,355	10,258	436	9,557	10,678	112	-	-	-	2,003	1,824	91
Glenwood	7,077	20,432	289	12,066	15,267	126	468	1,146	245	2,601	1,796	69
<i>Towns</i>												
Magrath	16,916	69,870	413	31,286	23,843	76	1,512	3,488	231	2,418	2,648	110
<i>Greater Towns</i>												
Milk River	40,081	135,700	339	40,953	37,943	93	3,672	4,240	115	7,290	6,168	85
Fort Macleod	24,524	94,488	385	26,174	23,436	90	1,128	1,363	121	1,974	725	37
Cardston	16,564	57,726	348	53,877	60,560	112	696	1,852	266	5,384	5,265	98
Study Area Total	138,080	501,200	363	231,572	245,813	106	8,519	13,837	162	27,999	24,815	89
Provincial Total	3,641,873	12,138,699	333	6,134,511	8,243,087	135	280,018	409,596	146	2,123,311	3,090,759	146

Source: Canadian Wheat Board.

Country Elevator Storage Capacity and Quota Acres

The optimum storage capacity required at a delivery point is a function of many factors, including the number of kinds and grades of grain produced in the area, the number of rail cars that can be loaded there, the frequency of rail service, the number of permits issued at the point, and other factors. A very important one, given the type of system operated by the Canadian Wheat Board, is the number of delivery quota acres tributary to the elevator point.

Table 33 presents data of elevator capacity, quota acres and the relationship between the two, in ratio form. A high ratio is indicative of an over-investment in elevator plant relative to the volume of grain that can reasonably be expected to be delivered to the elevator. Woolford, for instance, at 12.5 is too high for efficient operation of the elevators there. Pincher Station and Fort Macleod, at 4.1 and 4.2 respectively, are more likely to have higher through-puts and hence greater profitability, providing the regulated storage and handling rates permitted to be charged for these services are at the proper levels.

In the study area a total of six bushels per quota acre is required to fill the elevators, starting from completely empty and with no grain being shipped out. It is obvious that the region's elevators have been geared to the situation where storage revenue is favoured over handling revenue. In periods of volume movement of grain - a very desirable situation for grain producers - much of the storage capacity becomes redundant.

TABLE 33. ELEVATOR CAPACITY VERSUS TOTAL QUOTA ACRES, BY DELIVERY POINT, 1971-72

Delivery Point	Elevator Capacity	Total Quota Acres	Ratio of Bushel Capacity to Quota Acres
	— '000 bu. —	— acres —	
<i>Too Small to Classify</i>			
Raley	Closed		
Whiskey Gap	184	26,552	6.9
<i>Hamlets</i>			
Jefferson	69	8,921	7.7
Woolford	187	14,959	12.5
Brocket	342	52,552	6.5
<i>Villages</i>			
Spring Coulee	238	34,754	6.8
Pincher Station	239	58,215	4.1
Hill Spring	160	24,441	6.5
Glenwood	253	39,225	6.4
<i>Towns</i>			
Magrath	686	100,079	6.9
<i>Greater Towns</i>			
Milk River	1,188	186,838	6.4
Fort Macleod	510	121,072	4.2
Cardston	669	130,904	5.1
Study Area Total	4,725	798,512	5.9

Number of Boxcars per Shunt That Can be Loaded

The number of boxcars that an elevator operator can load in one group is limited by the length of the rail siding and the location of the elevator siding. While it may be possible to store twenty boxcars on the siding, perhaps only four or five can be loaded ready for collection by a train at one call. The number of car lengths between the elevator spout and the neighbouring company's spout at the ends of the siding is important.

Data for each delivery point in the study region, and each elevator company are given in Table 34. Generally, as the size of community increases, there are more elevators, and therefore a greater number of boxcars per delivery point. The range extends from 3 cars at Raley to 27 cars at Whiskey Gap and Glenwood.

TABLE 34. MAXIMUM NUMBER OF BOX-CARS THAT CAN BE HANDLED, BY DELIVERY POINT AND ELEVATOR COMPANY, 1970-71

Delivery Point	No. of Cars Per Point	Elevator Company	No. of Cars Per Company
<i>Too Small to Classify</i>			
Raley	3	Federal Grain Ltd.	3
Whiskey Gap	27	Alberta Wheat Pool	10
		Federal Grain Ltd.	17
<i>Hamlets</i>			
Jefferson	15	Alberta Wheat Pool	5
		United Grain Growers Ltd.	10
Woolford	15	Alberta Wheat Pool	9
		Federal Grain Ltd.	6
Brocket	4	Alberta Wheat Pool	1
		United Grain Growers Ltd.	1
		Federal Grain Ltd.	2
<i>Villages</i>			
Spring Coulee	12	Alberta Wheat Pool	6
		Federal Grain Ltd.	6
Pincher Station	15	Alberta Wheat Pool	11
		United Grain Growers Ltd.	4
Hill Spring	16	Alberta Wheat Pool	8
		Federal Grain Ltd.	8
Glenwood	27	Alberta Wheat Pool	8
		United Grain Growers Ltd.	19
<i>Towns</i>			
Magrath	22	Alberta Wheat Pool	6
		Ellison Mlg. & Elev. Co. Ltd.	7
		Federal Grain Ltd.	5
		Parrish & Heimbecker Ltd.	4
<i>Greater Towns</i>			
Milk River	16	Alberta Wheat Pool	8
		Ellison Mlg. & Elev. Co. Ltd.	5
		Milk River Grain Growers Ltd.	3
Fort Macleod	23	Alberta Wheat Pool	11
		Federal Grain Ltd.	4
		United Grain Growers Ltd.	8
Cardston	19	Alberta Wheat Pool	9
		Ellison Mlg. & Elev. Co. Ltd.	2
		Federal Grain Ltd.	4
		United Grain Growers Ltd.	4

Block Loading System

The beginning of the 1969-70 crop year was the start of a new system of issuing shipping orders and allocating boxcars, known as the Canadian Wheat Board Block Loading System. The blocks are comprised of the grain delivery points situated on specified groups of contiguous railway subdivisions, with those of one railway company being kept separate from the other.

Improved communications between the board and the elevator operators allow the board to know the quantities of each kind and grade of grain available for forwarding from each point, and thus from each block. The Board accordingly is able to issue shipping orders to the grain companies represented in each block, and the companies can then allocate boxcars to their elevators in the block to ship the correct kind and grade of grain the Wheat Board needs in forward positions.

Table 35 lists the delivery points, the loading blocks and the subdivisions in the study area.

TABLE 35. CANADIAN WHEAT BOARD BLOCK LOADING SYSTEM, 1970-71

Delivery Point	Canadian Wheat Board Loading Block		Railway Company	Sub-Division
	Number	Name		
<i>Too Small to Classify</i>				
Raley	83	Lethbridge	C.P.	Cardston
Whiskey Gap	83	Lethbridge	C.P.	Woolford
<i>Hamlets</i>				
Jefferson	83	Lethbridge	C.P.	Woolford
Woolford	83	Lethbridge	C.P.	Woolford
Brocket	84	Vulcan	C.P.	Crowsnest
<i>Villages</i>				
Spring Coulee	83	Lethbridge	C.P.	Cardston
Pincher Station	84	Vulcan	C.P.	Crowsnest
Hill Spring	83	Lethbridge	C.P.	Cardston
Glenwood	83	Lethbridge	C.P.	Cardston
<i>Towns</i>				
Magrath	83	Lethbridge	C.P.	Cardston
<i>Greater Towns</i>				
Milk River	83	Lethbridge	C.P.	Coutts
Fort Macleod	84	Vulcan	C.P.	Crowsnest
Cardston	83	Lethbridge	C.P.	Cardston

Source: Canada Grain Commission.

Estimated Number of Farm Trucks

Table 36 presents estimates of the number and size distribution of farm trucks registered in the Cardston region in 1966-67. Truck sizes are expressed in terms of gross vehicle weight (GVW) rather than in terms of tonnage or body styles as there is considerable variety in these classifications. Ton capacities corresponding to the GVW group shown would range from one-half ton in the 0-5,999 pound group to 3 and 4 tons in the upper end of the scale.

The average number of trucks per census farm in 1966 in census divisions 2 and 3 and Warner County No. 5 was applied to the total number of permit holders in the study area during 1966-67. The number of trucks per farm in the census division was 1.68 and there were 1,314 permit holders, resulting in an estimated 2,208 farm trucks in the study area.

Two thirds of the trucks were within the first two size groups (i.e. one-half and one ton trucks) and over half of these were of the half ton variety. The next largest number of trucks belonged to the 24,000-27,999 GVW group corresponding to larger 3 and 4 ton truck sizes.

TABLE 36. ESTIMATED NUMBER OF FARM TRUCKS IN THE STUDY AREA, 1966-67

Size of Truck (Gross Vehicle Weight)	Estimated Number of Trucks	Percent
0 – 5,999	1,190	54.1
6,000 – 7,999	260	11.8
8,000 – 9,999	7	0.3
10,000 – 11,999	20	0.9
12,000 – 13,999	92	4.2
14,000 – 15,999	33	1.5
16,000 – 17,999	79	3.6
18,000 – 19,999	0	0.0
20,000 – 23,999	214	9.7
24,000 – 27,999	279	12.7
28,000 and over	26	1.2
Study Area Total	2,200	100.0

Source: Calculated from data obtained from the *Agriculture Census of Canada, 1966* and the Canadian Transport Commission.

Farm to Elevator Hauling Distance: Prediversion

Tributary areas from which grain delivery points draw grain from producers were plotted for the crop years 1962-63 and 1969-70 as shown in Figures 1 and 2. Each quarter section, as recorded in individual Canadian Wheat Board permit books, was plotted producing a graphic portrayal of the relative sizes and shapes of hinterlands.

Naturally, unimproved farm land is included by this method of plotting. Excluded are crown land, waste land, bodies of water and farm land tributary to delivery points outside of the study area.

The farm to elevator hauling distance was measured from the corner of the farm nearest to a good road leading to the elevator. The route chosen involved two criteria, first shortest distance and second, best available road.

Table 37 shows the average mileage and the range of hauling distance for grain farmers at delivery points in the study area. From the table one can see that the larger centres not only attract more patronage for grain deliveries but also attract patronage from farther distances. The average length of haul to the small centres ranges from just over three miles to almost eleven miles, whereas to the larger centres the average haul is from just over eight miles to 14 miles. The average length of haul to Milk River was the largest for the study area, averaging 14.07 miles. This community also had the greatest number of farms composing its hinterland.

For the Cardston region as a whole, the average hauling distance in 1969-70 was approximately ten miles.

TABLE 37. FARM TO ELEVATOR HAULING DISTANCE, BY DELIVERY POINT, 1969-70

Delivery Point	Number of Farms	Hauling Distance			Average Mileage
		High	Low	Range	
— miles —					
Too Small to Classify					
Raley	8	5.65	1.75	3.90	3.30
Whiskey Gap	61	18.95	1.00	17.95	9.23
Hamlets					
Jefferson	23	13.00	2.50	10.50	5.38
Woolford	27	19.25	.75	18.50	5.26
Brocket	98	21.90	1.75	20.15	10.61
Villages					
Spring Coulee	31	12.10	1.00	11.10	4.73
Pincher Station	149	23.40	.50	22.90	10.90
Hill Spring	82	16.00	.50	15.50	5.62
Glenwood	76	18.40	.50	17.90	5.51
Towns					
Magrath	137	32.00	.50	31.50	8.25
Greater Towns					
Milk River	217	33.50	.50	33.00	14.07
Fort Macleod	189	26.00	2.25	23.75	11.50
Cardston	162	38.00	1.50	36.50	10.34
Study Area Total	1,260	38.00	.50	37.50	9.98

PART IV

SUGGESTED ALTERNATIVE GRAIN COLLECTION SYSTEM

The preceding parts have dealt with community characteristics, agricultural characteristics, and grain marketing and handling characteristics in the study area. This fourth part attempts to show what changes might be expected if some of the delivery points closed. "Rationalizing" delivery points in this manner is a hypothetical exercise and as such cannot be construed as a set of recommendations nor as a set of definitive adjustments that will in actual fact occur. Justification for the exercise may be found in the fact that, firstly, the probable directions of change are outlined and, secondly, estimates are made of the magnitudes of supposed changes.

Probable Diversions to Alternate Delivery Points from Delivery Points Assumed Closed

Tables 38 and 39 show the probable diversions that would occur in terms of acres and bushels if the specified points were assumed closed. Percentage distribution figures were determined on the basis of the number of permits diverted to each alternate delivery point. For example, all the permits from Whiskey Gap were diverted, 62.5 percent to Cardston, 27.8 percent to Magrath and 9.7 percent to Milk River. Total farm acreage at Whiskey Gap was 53,160 acres, therefore 33,238 acres (62.5 percent) went to Cardston, 14,763 acres (27.8 percent) went to Magrath and 5,159 acres (9.7 percent) went to Milk River. The number of bushels diverted was also derived by this procedure. Also in Table 38 a ten-year average, from 1959-60 to 1968-69 has been given.

Acreage and bushel diversions in Table 39 were derived from the preceding Table 38. Table 39 lists the seven affected points remaining open and the amounts of acreage and grain receipts each received from those points assumed to be closed. Unlike Table 38 the percentage distribution values in Table 39 were computed from the acreage diversion data, not vice versa.

TABLE 38. DIVERSIONS (FROM-TO) ACREAGES AND BUSHELAGES CONDITIONAL ON THE CLOSING OF SPECIFIED DELIVERY POINTS,¹ 1969-70

			Bushels Diverted	
From Closed Point To Diversion Point	Percent Diverted	Acres Diverted	1969-70	10-year Average 1959-60 to 1968-69
— ' 000 bushels —				
From: Raley				
To: Spring Coulee	90.3	13,185	68.5	88.1
Cardston	9.7	1,410	7.3	9.5
Total	100.0	14,595	75.8	97.6
From: Whiskey Gap				
To: Cardston	62.5	33,238	136.1	129.8
Magrath	27.8	14,763	60.5	57.8
Milk River	9.7	5,159	21.1	20.2
Total	100.0	53,160	217.7	207.8
From: Jefferson				
To: Cardston	71.9	11,410	77.6	108.2
Spring Coulee	28.1	4,459	30.3	42.3
Total	100.0	15,869	107.9	150.5
From: Woolford				
To: Cardston	82.6	24,124	170.5	146.6
Spring Coulee	17.4	5,076	35.9	30.9
Total	100.0	29,200	206.4	177.5
From: Hill Spring				
To: Cardston	47.2	28,243	104.9	69.3
Brocket	42.2	25,203	93.8	61.9
Pincher Station	10.6	6,317	23.6	15.5
Total	100.0	59,763	222.3	146.7
From: Glenwood				
To: Cardston	43.5	28,010	167.8	176.8
Brocket	31.3	20,140	120.8	127.2
Fort Macleod	25.2	16,253	97.2	102.5
Total	100.0	64,403	385.8	406.5
Total All Points		236,990	1,215.9	1,186.6

¹ Assume Raley, Whiskey Gap, Jefferson, Woolford, Hill Spring and Glenwood closed.

TABLE 39. DIVERSIONS (TO-FROM) ACREAGES AND BUSHELAGES CONDITIONAL ON THE CLOSING OF SPECIFIED DELIVERY POINTS¹, 1969-70

To Diversion Point From Closed Point	Percent Diverted	Acres Diverted	Bushels Diverted	
			1969-70	10-year Average 1959-60 to 1968-69
— ' 000 bushels —				
To: Milk River				
From: Whiskey Gap	100.0	5,159	21.1	20.2
Total	100.0	5,159	21.1	20.2
To: Pincher Station				
From: Hill Spring	100.0	6,317	23.6	15.5
Total	100.0	6,317	23.6	15.5
To: Magrath				
From: Whiskey Gap	100.0	14,763	60.5	57.8
Total	100.0	14,763	60.5	57.8
To: Fort Macleod				
From: Glenwood	100.0	16,253	97.2	102.5
Total	100.0	16,253	97.2	102.5
To: Spring Coulee				
From: Jefferson	19.6	4,459	30.3	42.3
Woolford	22.4	5,076	35.9	30.9
Raley	58.0	13,185	68.5	88.1
Total	100.0	22,720	134.7	161.3
To: Brocket				
From: Hill Spring	55.6	25,203	93.8	61.9
Glenwood	44.4	20,140	120.8	127.2
Total	100.0	45,343	214.6	189.1
To: Cardston				
From: Raley	1.1	1,410	7.3	9.5
Jefferson	9.0	11,410	77.6	108.2
Hill Spring	22.3	28,243	104.9	69.3
Whiskey Gap	26.3	33,238	136.1	129.8
Glenwood	22.2	28,010	167.8	176.8
Woolford	19.1	24,124	170.5	146.6
Total	100.0	126,435	664.2	640.2
Total All Points		236,990	1,215.9	1,186.6

¹ Assume Raley, Whiskey Gap, Jefferson, Woolford, Hill Spring and Glenwood closed.

Size of Hinterland, Original and Enlarged

Table 40 provides information on the size of hinterlands, in acres, before and after diversion, based on the 1969-70 experience. Only the hinterlands of the seven communities remaining open are listed in this table. Milk River had the largest original hinterland of 209,481 acres.

On the basis of these hypothetical changes Cardston would have the largest hinterland, that of 294,346 acres, which is an addition of 126,435 acres or a 75.3 percent increase. The range of percentage increase is from 2.5 percent at Milk River to 75.3 percent at Cardston. With six communities suggested to be closed there would be a total of 236,990 acres to be absorbed by the other communities.

TABLE 40. SIZE OF ORIGINAL HINTERLANDS, 1969-70, ESTIMATED ACREAGE INCREASE AND SIZE OF ENLARGED HINTERLANDS CONDITIONAL ON CLOSING OF CERTAIN DELIVERY POINTS¹

Diversion Point	Original Size	Acreage Increase	Enlarged Size	Percent Increase
	— acres —	— acres —	— acres —	
Milk River	209,481	5,159	214,640	2.5
Pincher Station	132,925	6,317	139,242	4.8
Magrath	137,973	14,763	152,736	10.7
Fort Macleod	167,994	16,253	184,247	9.7
Spring Coulee	41,901	22,720	64,621	54.2
Brocket	98,005	45,343	143,348	46.3
Cardston	167,911	126,435	294,346	75.3

¹ Assume Raley, Whiskey Gap, Jefferson, Woolford, Hill Spring and Glenwood closed.

Farm to Elevator Hauling Distances for Delivery Points Hypothetically Closed 1969-70

Table 41 provides information concerning the length of haul from farm to elevator in the six specified points that are assumed to be closed; based on the 1969-70 experience. The range of average hauls varies from 3.30 miles at Raley to 9.23 miles at Whiskey Gap. If the elevator plant at these points were closed, the average hauling distance would rise. The least increase, 2.68 miles would occur in the Raley hinterland. The greatest would be at Whiskey Gap, where the length of average haul for permit holders who had been delivering to Whiskey Gap, would be 26.43 miles, which is an increase of 17.20 miles. The range of new average hauls would be from 5.98 at Raley to 26.43 at Whiskey Gap.

TABLE 41. MAXIMUM AND AVERAGE FARM TO ELEVATOR HAULING DISTANCES IN THE STUDY AREA FOR DELIVERY POINTS HYPOTHETICALLY CLOSED¹, BASIS CROP YEAR 1969-70

Delivery Point	Before Closing		After Closing		Change
	Maximum Haul	Average Haul	Maximum Haul	Average Haul	Average Haul
— miles —					
Raley	5.65	3.30	8.25	5.98	2.68
Whiskey Gap	18.95	9.23	35.35	26.43	17.20
Jefferson	13.00	5.38	22.75	16.65	11.27
Woolford	19.25	5.26	24.00	12.33	7.07
Hill Spring	16.00	5.62	25.00	20.02	14.40
Glenwood	18.40	5.51	27.00	21.76	16.25

¹ Assume Raley, Whiskey Gap, Jefferson, Woolford, Hill Spring and Glenwood closed.

Farm to Elevator Hauling Distances for Remaining Points

Table 42 provides information concerning the length of haul from farm to elevator in the seven points that are assumed to remain open and which would receive grain from the farms in the hinterlands of the six points which are hypothetically closed. The range of the average hauls of these points varies from 4.73 miles at Spring Coulee to 14.07 miles at Milk River. With the reallocation of the land of the hinterlands assumed to be closed, there would be an increased average haul for the farmers to the remaining open communities. This increased average distance ranges from 0.23 miles at Fort Macleod to 5.01 miles at Cardston. The post diversion average hauling distance ranges from 6.87 at Spring Coulee to 15.35 at Cardston.

TABLE 42. MAXIMUM AND AVERAGE FARM TO ELEVATOR HAULING DISTANCES IN THE STUDY AREA FOR REMAINING DELIVERY POINTS, BEFORE AND AFTER HYPOTHETICAL INCREASE IN SIZE OF HINTERLANDS, BASIS CROP YEAR 1969-70

Delivery Point	Before Closing		After Closing ¹		Change
	Maximum Haul	Average Haul	Maximum Haul	Average Haul	Average Haul
— miles —					
Milk River	33.50	14.07	35.35	14.35	0.28
Pincher Station	23.40	10.90	25.00	11.32	0.42
Magrath	32.00	8.25	33.10	11.32	3.07
Fort Macleod	26.00	11.50	26.00	11.73	0.23
Spring Coulee	12.10	4.73	18.50	6.87	2.14
Brocket	21.90	10.61	25.50	13.63	3.02
Cardston	38.00	10.34	38.00	15.35	5.01

¹ Assume Raley, Whiskey Gap, Jefferson, Woolford, Hill Spring and Glenwood closed.

Through-Put Ratio

Upon rationalizing the grain delivery point system in the study area by assuming six delivery points closed total storage capacity would be reduced. Assuming further that no new storage space is constructed, through-put ratios were calculated. Table 43 shows the actual 1969-70 ratios and the hypothetical 1969-70 ratios for the communities gaining diverted acreage. Through-put ratios increased in all delivery points listed, although none were above a 3.0 ratio¹ which is generally considered the point where an elevator pays for itself.

One might speculate that an economically optimum through-put ratio is in the neighborhood of 10.0². On that basis given the present plant and labour resources, then even after diversion none of the country elevators in the study area would experience any difficulty in handling the additional through-put. No doubt total variable costs would increase; but total costs per bushel handled would decrease.

TABLE 43. THROUGH-PUT RATIOS, BY DELIVERY POINT, 1969-70 ACTUAL, AND 1969-70 HYPOTHETICAL, CONDITIONAL ON CERTAIN POINTS BEING CLOSED¹

Delivery Point	1969-70 Actual	1969-70 Hypothetical
Milk River	1.56	1.58
Pincher Station	1.77	1.87
Magrath	1.10	1.19
Fort Macleod	1.98	2.17
Spring Coulee	1.49	2.06
Brocket	1.17	1.80
Cardston	1.30	2.29

¹ Assume Raley, Whiskey Gap, Jefferson, Woolford, Hill Spring and Glenwood closed.

¹ D. Zasada, "The Probable Effects of the Application for Railway Branch Line Abandonment on the Grain Elevator Industry", *Canadian Farm Economics*, April, 1968, page 21.

² Speculative reasoning might suggest the following example. Suppose a one-elevator delivery point has a storage capacity of 25,000 bushels. A through-put ratio of 10.0 would require the handling of 250,000 bushels per year. At 2,000 bushels per boxcar the elevator agent would only have to load 125 cars per year or about 2.5 boxcars per week for 50 weeks.

Number of Permit Holders

If the kind of rationalization suggested in this report were to take place there would also be adjustments in the number of permit holders associated with each delivery point affected. Table 44 shows the number of permit holders in the Cardston region. The breakdown of permits for each of the thirteen points in the study area is given. The number of permit holders delivering to the six points assumed to be closed is 277 which is 22 percent of the total number of permit holders in the study.

Cardston gained the largest number of permit holders with an increase of 173 permits added on to the original 162.

TABLE 44. NUMBER OF PERMIT HOLDERS, BY DELIVERY POINT, AND ESTIMATED NUMBER IF CERTAIN GRAIN DELIVERY POINTS WERE CLOSED, 1969-70

Delivery Point	Number of Permit Holders 1969-70	Estimated Number of Permit Holders 1969-70 ¹
Raley	8	—
Whiskey Gap	61	—
Jefferson	23	—
Woolford	27	—
Hill Spring	82	—
Glenwood	76	—
Milk River	217	220
Pincher Station	149	155
Magrath	137	159
Fort Macleod	189	193
Spring Coulee	31	45
Brocket	98	153
Cardston	162	335
Study Area Total	1,260	1,260

¹ Assume Raley, Whiskey Gap, Jefferson, Woolford, Hill Spring and Glenwood closed.

PART V

REGULATION OF GRAIN INDUSTRY

Regulation of the Grain Industry

The unfairness inherent in a situation involving a large number of sellers facing a very few buyers, which is what prevails in prairie grain marketing, led to the very high degree of regulation that characterizes the industry today. This takes the form of regulation of the grain warehouse industry, i.e., the elevators, by the Canadian Grain Commission; regulation of the grain marketers, including the producers, by the Canadian Wheat Board; and regulation of the grain carriers; i.e., railways, truckers, and lake vessel operators, by those two bodies plus the Canadian Transport Commission.

The following description of the activity of these regulatory bodies is not intended to be exhaustive by any means. It covers the main areas of the impact of regulation on producers, elevator operators and railways. It is included here in order to complete the picture shown in these Prairie Regional Studies in Economic Geography, because it is believed that the welfare of the farms and the communities is significantly influenced by regulation.

Canada Grain Act, R.S.C. 1970 Ch. G-16

The Canadian Grain Commission superseded the Board of Grain Commissioners for Canada on April 1, 1971, by virtue of an amended Canadian Grain Act passed by the Federal Parliament in 1970. Among several important changes in the Act is the definition of an elevator, (Section 2). For licensing purposes it is no longer required that the elevator be situated on a railway right-of-way. Any premises that meet certain construction standards specified by the Commission and where bulk grain can be received, weighed, elevated, stored and discharged into a transport conveyance qualified for application for a licence to handle western grain.

The once familiar term "country elevator" has been changed to "primary elevator", for regulation purposes. It is defined as "an elevator the principal use of which is the receiving of grain directly from producers".

The costs of the Canadian Grain Commission are borne by the Federal Treasury, not by the farmers. The commissioners and their staff are public servants.

The Commission establishes and maintains standards of quality for Canadian grain, in the interests of the grain producers.

Any dispute between the grain producer and grain buyer as to grade or dockage is settled by referring a small sample of the parcel of grain to the Canadian Grain Commission. As far as weighing goes, the elevator operator must allow the farmer every opportunity to verify the weight of his grain.

The Commission may consent to the mixing of different grades of grain in terminal and transfer elevators. Without such consent no such mixing is permitted. The Commission periodically checks the inventory of grain in each and all elevators.

Only a public carrier may transport grain described by an official grade name across a provincial boundary. Only a public carrier may transport any grain from Western Canada to Eastern Canada or out of Canada. On the other hand a public carrier may not deliver grain to a primary elevator without the consent of the Canadian Grain Commission.

Grain producers who qualify to ship a complete carload of grain to a terminal or a transfer elevator may have a rail car allocated to them for this purpose by the Canadian Grain Commission. Where it is the public interest to do so the federal cabinet can order a railway company to spot cars for transporting grain at any point where the railway company supplies service. In such cases it is the grain producer's right to select the elevator of his choice or to load directly into the rail car.

The car order book is no longer used as the legal instrument to ensure equity in rail car supply.

The Canadian Grain Commission can issue regulations governing the activity in all the licensed elevators in order to ensure the orderly movement of grain.

The Canadian Grain Commission can set maximum freight rates for the carriage of Canadian grain by lake vessel between any Canadian points. This responsibility is given to the Commission under the Inland Water Freight Rates Act.

The Canadian Wheat Board Act R.S.C. 1970 - Ch. C-12

The Canadian Wheat Board was created in the mid-depression year of 1935 when the prairie wheat pools and the prairie provincial governments, who had guaranteed the pools' bank loans, proved to be incapable of surviving the tremendous pressures caused by a great scarcity of sales all over the world, together with below-cost prices for the wheat that was sold. Today the Canadian Wheat Board plays a dominant role in the marketing of grain in Western Canada. The Board has an indirect impact on the production of virtually all crops in the prairie provinces.

The Board consists of five commissioners appointed by the federal cabinet. It employs 575 support staff. Board members and staff receive their salaries and wages out of the proceeds from the sale of the farmers' grain. Indeed all the costs of the operation of the Canadian Wheat Board are borne by the grain producers

collectively. Some assistance is received by them from the federal treasury to cover part of the cost of storing wheat in commercial positions, i.e., off the farm. (See note on the Temporary Wheat Reserves Act.)

The Canadian Wheat Board has permanent offices in Winnipeg, Vancouver, Montreal, London England, and Tokyo. The Board uses the established grain export companies as their selling arm, on an agency basis. They have 25 firms which act as their shippers and exporters via the Lakehead and eastern route, and 17 firms via the Pacific Coast ports.

The Canadian Wheat Board has no assets of its own. It has no funds. It retains no profits. The money to pay for the wheat, durum, oats, and barley delivered by the producers is obtained by borrowing from the chartered banks. The cost of this money is borne by the producers. Nor does the Board own or operate grain handling, storage or transportation facilities. It contracts with the licensed primary elevator operators to act as buying and forwarding agents.

The object of the Board is to market grain in an orderly manner. Their marketing function is limited to interprovincial and export trade. Grain marketed intra-provincially does not come under the Wheat Board's jurisdiction, although it does extend to all elevators, flour mills, feed mills, feed warehouses and seed cleaning mills.

Cabinet appoints an eleven-member Advisory Committee, of which at least six members represent wheat producers.

Cabinet has the authority to direct the Board as to the manner in which it is to conduct its operations, but in practice the Board has operated with a great deal of autonomy.

Elevators are operated for and on behalf of the Board. Only Board agents may operate an elevator, unless the Board excepts that elevator from the provisions of the Canadian Wheat Board Act.

The Wheat Board has the authority to limit individual producers' deliveries of grain. This is accomplished in a routine fashion by the issuing of permit books and by the fixing of delivery quotas at specified delivery points, together with some special delivery quotas for selected grain.

Only the producer of the grain is permitted to deliver grain to an elevator. (Producer includes the actual producer and any person entitled as the landlord, vendor or mortgagee to the grain.)

Bonafide grain producers are entitled to have a permit book issued to them by the Board. The actual producer of the grain has the prior right to possession of the permit book. Only one permit book may be issued per farm unit. Where there are two or more producers entitled to the grain from a farm unit, none can deliver in excess of his proper share of the delivery quota.

Only producers who are permit book holders may deliver grain to a licensed elevator and then only to one of the two delivery points named in the individual's permit book. Normally the producer chooses the delivery point, but the Wheat Board does have the authority to prescribe the delivery point.

The quantity of grain delivered must not exceed the quota established at the time of delivery for the kind of grain being delivered and for the point stipulated. A record of all deliveries must be entered in the permit book.

Provided all the Board's orders and regulations have been complied with, the Board must buy all the wheat, durum, oats, and barley offered by bonafide producers. The Board must pay the appropriate initial payment on delivery. Normally this is done by the elevator operator, acting on behalf of the Board. He is recompensed for all his costs when the grain is delivered to the Board at a terminal or mill elevator.

A record of the grain delivered and the payment is entered into an accounting pool, along with all the other grain of like kind and grade delivered in the same crop year. Each producer participating in the pool shares in the equitable distribution of the pool surplus. The accounting pool period coincides with the crop year.

Only grain that has been taken into an elevator in accordance with the Wheat Board's orders and regulations may be loaded into a railway car.

The Wheat Board has the authority to order grain, by grade, to be loaded out of any elevator into railway cars or lake vessels. Thus grain is shipped out of the primary country elevators according to the shipping orders issued by the Board to its agents, the elevator operators. The Board also has the authority to prohibit the movement of any kind of grain out of an elevator. The Board can allocate railway cars to specific persons or elevators at specific delivery points. However, in the normal course of events it refrains from becoming so specific, preferring to allocate shipping orders and cars en masse to its agents for movement out of elevators situated on specified loading blocks.

Nowadays only the grain that is produced in the "designated area" comes under the jurisdiction of the Canadian Wheat Board. This is most of the grain produced in Canada, of course. The designated area comprises all of Manitoba, Saskatchewan and Alberta plus the Peace River Block and the Creston-Wynndel areas, both in British Columbia, and a small area in the Rainy River region of Ontario near the Manitoba border.

After the Wheat Board has received payment for the wheat, durum, oats and barley delivered to the Board's respective pools, a distribution of the balance remaining in the accounts after deduction of all charges against the grains is made in the form of a final payment. This cheque is mailed to the producers from the Board six to nine months after the pool has been closed for deliveries at the end of the crop year. The amount per bushel of the final payment depends on the grade of the grain, and on the prices obtained by the Board.

The Canadian Wheat Board has the authority to prohibit the export from or import into Canada of any wheat, durum, oats, barley or the products thereof. Likewise it can prohibit the transport of these grains from one province in Canada to another. Indeed, only the Board is permitted to contract these grains for sale anywhere other than the province of origin of the grain. The Board may grant licences for the export or import of wheat, durum, oats or barley, as well as for the transport of these grains across provincial boundaries.

Temporary Wheat Reserves Act

This Act was passed by the federal parliament in 1956. As explained by the Minister of Trade and Commerce at the time, it was in lieu of a two-price system.

The legislation gave the federal government the responsibility for payment of both the storage and the bank interest costs for 365 days on those Canadian Wheat Board holdings of wheat and durum in excess of 178 million bushels that happen to be in commercial (i.e., off-farm) storage at opening of business on the first day of each crop year, i.e., August 1. The rates paid per bushel are those prevailing on the last day of the previous crop year, i.e. July 31.

The purpose of the Act is to relieve the Canadian Wheat Board, and thus the western wheat producers, from the burden of paying the carrying costs on abnormally large stocks of wheat and durum. Without the Act the Wheat Board might be forced into panic methods of disposing of this grain, in violation of their duty to market wheat in an orderly manner.

The federal treasury makes monthly payments to the Canadian Wheat Board of one-twelfth of the amount of the carrying charges on the excess stocks. This total is prorated in the accounting pools and is eventually paid out to the producers as part of the final payment.

If at the beginning of a crop year the Board's stocks of wheat and durum are not more than 178 million bushels, then no more payments are to be made for that or any subsequent crop year. In other words the Temporary Wheat Reserves Act would be null and void. Thus, to that extent, the act is a temporary one.

National Transportation Act R.S.C. 1970 Ch. N-17

The National Transportation Act became law in 1967 with the declared credo that "an economic and efficient transportation system, making the best use of all available modes of transportation at the lowest total cost, is essential to protect the interests of the users of transportation and to maintain the economic well-being and growth of Canada ...".

The Act established the Canadian Transport Commission and dissolved the Board of Transport Commissioners for Canada. Under the new Commission several committees were established. The one that has an impact on grain production and marketing in Western Canada is known as the Railway Committee. There are seventeen commissioners, five of whom serve on this latter committee.

The commissioners are appointed by the federal cabinet. They and their staff are government employees, and their salaries are paid for by the federal treasury.

The commission administers the Railway Act. It has the authority to regulate and licence any mode of transport in Canada, including control over rates and tariffs charged and the administering of transport subsidies voted by Parliament.

Any person may apply to the commission for permission to appeal a rate set by a carrier, if he believes that the effect of the rate would be prejudicial to the public interest. If, following a hearing, the commission concurs, it may make an order requiring the carrier to remove the prejudicial feature of the rate. At such a hearing representatives of provincial or municipal governments and of shippers or consignees are entitled to appear.

The greatest impact of the National Transportation Act on the grain production and marketing system stems from the provisions covering the abandonment of uneconomic branch lines. Branch line includes all subsidiary, secondary, local or feeder lines of railway. Segments of branch lines may also be applied for.

The commission sets the rules governing the filing of abandonment applications and the determination of whether or not the branch line in the application is indeed eligible for abandonment on economic grounds.

The commission holds public hearings on the question of abandonment of the branch line to hear all persons who wish to present their views. On the basis of the application and the hearing, the commission determines whether or not the branch line is uneconomic, is likely to continue to be uneconomic and whether the line should be closed down or remain open. Only lines that have incurred an actual operating loss in the last accounting year may be given permission to cease operating.

A hearing can cover several applications at the same time if the branch lines in question are in the same or adjoining areas. The commission has the authority to determine the order in which applications may be considered, although it may request the submitting railway company to specify its preferred order.

In determining whether or not a branch line may be abandoned, the commission considers, among other factors, the public interest; the actual losses incurred; the alternative transportation facilities; the adjustment period required; the disruption to the economy of the communities and the area; the effect on other lines and other carriers; the feasibility of maintaining the line or any part of it by, a) changing the

method of operation, b) inter-connecting with another line, c) sale or lease of the line or part of it to another railway company, d) exchanging running rights, e) constructing connecting lines with lines of another company; the known or potential resources of the area; the seasonal restrictions on other forms of transport; and the future transportation needs of the areas.

When the commission decides that a branch line or segment ought to be abandoned, it sets a closing date between one month and five years following the date of the abandonment order. The railway company must cease its operation of that line on the specified date.

When the commission is not satisfied that the line ought to be abandoned it orders the railway to continue its operation but reconsiders the abandonment application periodically in the light of new conditions that may emerge.

The commission may recommend to the railway companies the rationalization of their lines through the exchange of branch lines between companies, through the exchange of running rights on other lines and through the connecting of lines of rival companies, even though no application for abandonment has been filed on the lines in question. The commission may also recommend to the rail companies that applications for abandonment of branch lines be filed.

Where the commission has determined that a branch line is indeed uneconomic but the line continues to operate, the railway company is entitled to claim for the actual loss accruing to that line in each fiscal year. The commission in such cases must examine the figures in the claim and recommend to the Minister of Finance that the rail company in question be paid the verified amount of the loss.

Cabinet may designate specific branch lines that are not permitted to be abandoned during set periods. This was done for the so-called protected lines that may not be closed before January 1, 1975. If losses are incurred in the operation of such lines the rail company may claim for the losses, even though no application has been filed. The claim may be paid, on the recommendation of the commission.

The National Transportation Act again makes statutory the rail freight rates on grain set by the "Act to Authorize a Subsidy for a Railroad through the Crows Nest Pass" S.C. 1897 c.5. For the first time it makes statutory the rail freight rates on grain moving from prairie points to the Pacific Coast ports and Churchill, for export, at the levels prevailing on December 31, 1966. These rates now require an Act of Parliament to be changed. Before the National Transportation Act was passed the export freight rates to the Pacific were set by an order of the Board of Transport Commissioners and the level of these rates was established having regard to the Crows Nest rates on grain moving eastward to the Lakehead.

Chronology of Government Legislation, Court Rulings, Board Orders, Regulations, etc., Having an Impact on Production and Marketing of Grain in Western Canada.

- 1872 Dominion Land Act S.C. 1872, C.6.
- 1876 First export of wheat from the Prairies.
- 1878 St. Paul Railway entered Winnipeg.
- 1881 First elevator built in Western Canada.
- 1881 Canadian Pacific Railway completed between Fort William and Winnipeg.
- 1882 First cargo of wheat left the Lakehead (Fort William).
- 1883 First elevator built at the Lakehead (Port Arthur).
- 1885 First all-Canadian rail link (Canadian Pacific) between the Prairies and Pacific Coast opened.
- 1887 Formation of the Winnipeg Grain Exchange.
- 1897 An Act to authorize a subsidy for a Railroad through the Crows Nest Pass S.C. 1897, C.5. (Crows Nest Freight rates on western grain moving to Fort William).
- 1899 Royal Commission on the Shipment and Transportation of Grain.
- 1900 Manitoba Grain Act S.C. 1900, C.39.
- 1904 Building of the western portion of the Grand Trunk Pacific to Prince Rupert, (Completed 1912).
- 1904 Grain Inspection Act S.C. 1904, C.15.
- 1905 Introduction of Marquis Wheat.
- 1906 Royal Commission on the Grain Trade in Canada.
- 1908 Winnipeg Grain Exchange reformed; became an unincorporated voluntary association.
- 1911 Act creating the Saskatchewan Co-operative Elevator Company.

- 1912 Canada Grain Act S.C. 1912, C.27. et seq. established the Board of Grain Commissioners.
- 1912 First Canadian Government Elevator opened, at Port Arthur.
- 1914 First Canadian Government Interior Terminal Elevators opened, at Moose Jaw and Saskatoon.
- 1915 Panama Canal opened.
- 1916 First Canadian Government Elevator on the Pacific Coast opened.
- 1916 United Grain Growers from amalgamation of three grain growers associations and the Alberta Farmers' Co-op Elevator Company.
- 1917 Board of Grain Supervisors P.C. 1917-1552 (to June 6, 1919).
- 1919 Soldiers Settlement Act S.C. 1919, C.19 et seq.
- 1919 Canadian Wheat Board Act S.C. 1919, C.9 (to 1922).
- 1923 Royal Grain Inquiry Commission P.C. 1923-774.
- 1923 Prairie Wheat Pools formed.
- 1925 Major revision of the Canada Grain Act.
- 1928 Select Standing Committee of the House of Commons dealt with the grading of wheat by protein content.
- 1929 Hudson Bay Railway completed to Port Churchill.
- 1929 Welland Ship Canal expanded and modernized.
- 1929 Prairie Provincial Governments guaranteed bank loans to the three Wheat Pools.
- 1930 Dominion Government provided financial assistance to the banks and the provincial governments covering grain loans.
- 1930 Mr. John I. McFarland appointed by the Federal Government as general manager of the Canadian Co-op. Wheat Producers' Ltd.
- 1930 Revision of the Canada Grain Act S.C. 1930, C.5 et seq.

- 1931 Prairie Wheat Pools separated from their Central Selling Agency the Canadian Co-operative Wheat Producers Ltd.
- 1931 An Act Respecting Wheat S.C. 1931, C.60 (5¢ freight subsidy).
- 1931 Commission to Inquire into Trading in Grain Futures P.C. 1931-853.
- 1931 Grain Marketing Act S.S. 1931, C.87 (100% pool).
- 1931 First shipment of wheat through Port Churchill.
- 1932 Ottawa Economic Conference: Canada obtained preference on wheat in British market.
- 1933 United States legislation, the Agricultural Adjustment Act; parity prices established.
- 1933 Commodity Credit Corporation established in U.S.A.
- 1933 London Wheat Conference and subsequent International Wheat Agreement.
- 1934 Farmers' Creditors Arrangement Act S.C. 1934, C.53.
- 1934 Natural Products Marketing Act S.C. 1934, C.57.
- 1934 Natural Products Marketing Act ruled ultra vires of the Dominion Government by the Supreme Court of Canada.
- 1934 Emergency Wheat Control Act S.M. 1934, C.48.
- 1935 Prairie Farm Rehabilitation Act S.C. 1935, C.23 et seq.
- 1935 Canadian Wheat Board Act S.C. 1935, C.53 et seq.
- 1936 Royal Grain Inquiry Commission P.C. 1936-1577.
- 1938 Canada-United States trade agreement (abrogated British preference on Canadian Wheat).
- 1939 Agricultural Products Co-operative Marketing Act S.C. 1939, C.28 et seq.
- 1939 Grain Futures Act S.C. 1939, C.31.
- 1939 Prairie Farm Assistance Act S.C. 1939, C.50 et seq.

- 1939 Canadian Wheat Board opened Eastern office in Toronto.
- 1940 First implementation of delivery quota systems of control over western grain marketing.
- 1941 Wheat Acreage Reduction Regulations P.C. 1941-3047.
- 1941 Feed Freight Assistance Regulations P.C. 1941-7523 et seq.
- 1942 Wheat Acreage Reduction Act S.C. 1942, C.10.
- 1942 Veterans Land Act S.C. 1942-43, C.33 et seq.
- 1943 Wheat Futures Trading discontinued on the Winnipeg Grain Exchange; Canadian Wheat Board made exclusive marketing agency for wheat.
- 1944 Farm Improvement Loans Act S.C. 1944, C.41 et seq.
- 1944 Agricultural Prices Support Act.
- 1944 Canadian Wheat Board Act amended to exempt the Board from authority in marketing Eastern Wheat P.C. 1944-5640.
- 1945 The Food and Agriculture Organization of the United Nations Act S.C. 1945, C.4 et seq.
- 1946 United Kingdom Wheat Agreement.
- 1948 Canadian Wheat Board empowered to control interprovincial movement of wheat products.
- 1948 International Wheat Agreement (No.1) P.C. 1948-1016.
- 1949 Manitoba Coarse Grain Marketing Control Act R.S.M. 1954, C.41.
- 1949 Saskatchewan Grain Marketing Act, R.S.S. 1953, C.241.
- 1949 Alberta Coarse Grain Marketing Control Act S.A. 1949, C.25.
- 1949 Marketing of oats and barley brought under the Canadian Wheat Board.
- 1951 Appropriations Act No.2 1951, C.2, provided for a grant of \$65 million to the 1945-49 Pool as settlement to western grain producers for participation in the United Kingdom Wheat Agreement.

- 1951 St. Lawrence Seaway Authority Act S.C. 1951, C.24 et seq.
- 1951 Prairie Grain Producers Interim Financing Act S.C. 1951, C.20 et seq.
- 1952 Extension of Colombo Plan to wheat aid.
- 1953 International Wheat Agreement (No.2) P.C. 1953-556.
- 1953 Application of accelerated depreciation for Income Tax purposes to commercial grain storage facilities.
- 1954 Canada-Japan trade agreement extended M.F.N. rates to Japan and opened Japanese market to Canadian grain.
- 1954 Inauguration of United States Public Law 480.
- 1955 Churchill elevator capacity doubled.
- 1955 GATT resolution on surplus disposal.
- 1956 Canada-U.S.S.R. trade agreement extended M.F.N. rates to U.S.S.R., which government agreed to buy 1.2 million tons of Canadian Wheat.
- 1956 First shipment of flour to United Nations Relief and Works Agency.
- 1956 Prairie Grain Producers Interim Financing Act S.C. 1956, C.1.
- 1956 Temporary Wheat Reserves Act S.C. 1956, C.2.
- 1956 International Wheat Agreement (No.3) P.C. 1953-734.
- 1957 Prairie Grain Advance Payments Act S.C. 1957, C.2.
- 1957 Establishment of FAO Group on Grains.
- 1957 Agricultural Stabilization Act S.C. 1957, C.22. Succeeded the Agricultural Prices Support Act.
- 1957 Treaty of Rome established the European Common Market.
- 1958 First time that the Canadian Wheat Board failed to make a final payment (Oats Pool, 1956-57).

- 1958 Grain Farmers march on Ottawa.
- 1958 Western Grain Producers Acreage Payment Regulations P.C. 1958-1442.
- 1958 Bracken Enquiry into the Distribution of Railway Boxcars P.C. 1958-181.
- 1959 Supreme Court upheld the Board of Transport Commissioners' ruling that demurrage charges on box cars is permitted at terminal elevators after ten days.
- 1959 Cabinet suspended Board of Transport Commissioners' ruling on demurrage.
- 1959 International Wheat Agreement (No.4) P.C. 1959-480.
- 1959 Formal institution of Canada-United States Quarterly Meetings on wheat and related matters.
- 1959 Food for Peace Conference (Wheat Utilization Committee).
- 1959 Bracken formula for box car allocation instituted.
- 1959 St. Lawrence Seaway opened.
- 1959 Canadian Wheat Board pricing policy changed to take advantage of new freight conditions consequent on St. Lawrence Seaway opening.
- 1959 Crop Insurance Act S.C. 1959, C.42 et seq. Crop Insurance Test Areas Act S.M. 1959, C.14; the Saskatchewan Crop Insurance Act S.S. 1960, C.57.
- 1959 Royal Commission on Transportation P.C. 1959-577.
- 1960 Prairie Grain Provisional Payments Act S.C. 1960, C.2.
- 1960 Prairie Grain Loans Act S.C. 1960, C.1.
- 1960 Freedom from Hunger campaign.
- 1960 Western Grain Producers Acreage Payment Regulations, 1960.
- 1960 Addition of Title IV to United States Public Law 480.
- 1960 Canadian Wheat Board instituted off quota feed mill policy.

- 1961 Railway Act amended to include rapeseed as a grain.
- 1961 Report of the Royal Commission on Transportation (MacPherson) recommended branch line abandonment and subsidy to cover losses on grain transport.
- 1961 Agricultural Rehabilitation and Development Act S.C. 1960.
- 1961 Sale of wheat to China under long term credits.
- 1962 EEC Ministerial decision implemented the Common Agricultural Policy.
- 1962 Western Grain Producers Acreage Payment Regulations, 1962.
- 1962 Extension of U.S.A. title IV P.L. 480 provisions to the private grain trade.
- 1962 Canadian dollar value fixed at exchange rate of $92\frac{1}{2}$ ¢ vis-a-vis the U.S. dollar.
- 1962 Introduction of the European Common Market Grain Regulations, including the import levy system.
- 1962 International Wheat Agreement (No.5) P.C. 1962-631.
- 1963 Inauguration of the World Food Program.
- 1963 World Food Congress (Freedom from Hunger) Washington, June.
- 1963 Winter Storage Subsidy on feed grain in Eastern Elevators paid by Federal Government.
- 1963 Sale of 250 million bushels of wheat to U.S.S.R.
- 1964 Kennedy Round of tariff reductions began, under the General Agreement on Tariffs and Trade.
- 1964 Minimum Import Price System applied in the United Kingdom.
- 1964 Export Flour Adjustment Policy discontinued by the Canadian Wheat Board.
- 1964 Canadian Wheat Board H.Q. Building expanded.
- 1965 International Wheat Agreement extended by protocol for one year, without amendment.

- 1965 Asian wheat production exceeded two billion bushels for the first time.
- 1965 Grain Transportation Committee formed.
- 1966 International Wheat Agreement again extended by protocol for one year to July 31, 1967.
- 1966 Winter Storage Subsidy on feed grain in eastern elevators cancelled.
- 1966 National Transportation Act S.C. 1966-67, C.69 (An Act to define and implement a national transportation policy for Canada).
- 1966 Livestock Feed Assistance Act S.C. 1966, C.52. Canadian Livestock Feed Board established.
- 1967 Price and quantity obligations under the International Wheat Agreement ceased; administrative provisions extended until June 30, 1968.
- 1967 Federal Treasury guaranteed price equivalent of \$1.95¹/₂ basis No.1 Northern, Lakehead, on Canadian Wheat Board sales of wheat, until beginning of IGA.
- 1967 International Grains Arrangement negotiated under the Kennedy Round and special Rome Conference.
- 1968 Canada Grains Council formed.
- 1968 International Grains Arrangement came into effect July 1. World Prices dropped below the arranged minimums; Canadian prices held.
- 1968 Prairie Grain Advance Payments Act amended to double the payment rate and to provide advances to cover cost of drying grain.
- 1969 Canadian prices dropped below the IGA arranged minimums.
- 1969 Canadian Wheat Board selling prices to Canadian buyers for domestic use held at the \$1.95¹/₂ equivalent level. Two price system.
- 1969 Block Loading System instituted by the Canadian Wheat Board as a method of calling forward desired kinds and grades of grain.

- 1970 Canadian dollar unpegged.
- 1970 Boden Committee reviewed and reported on the delivery quota system for Western Canadian grain.
- 1970 Canadian Wheat Board inaugurated quota system aimed at making deliveries more selective and market-oriented, and at keeping adequate working space in country elevators.
- 1970 Wheat and Barley pools (1968-69) failed for the first time to make a final payment, and for the second time there was no final payment on an Oats pool (1968-69).
- 1970 Federal Government Wheat Acreage Reduction Program (Operation Lift) in effect; wheat planting down 50%.
- 1970 Delivery quota regulations changed to eliminate the unit quota and to move from specified acreage quota to seeded acreage (except for wheat) plus assigned acreage; each permit holder allowed two delivery points.
- 1971 Quota regulations again changed to a completely assignable acreage base, and terminable quotas introduced.
- 1971 Canada Grain Act S.C. 1970-71, C.7; replaced the Board of Grain Commissioners for Canada with the Canadian Grain Commission.
- 1971 Prairie Grain Advance Payments Act amended S.C. 1971, c.P-18.

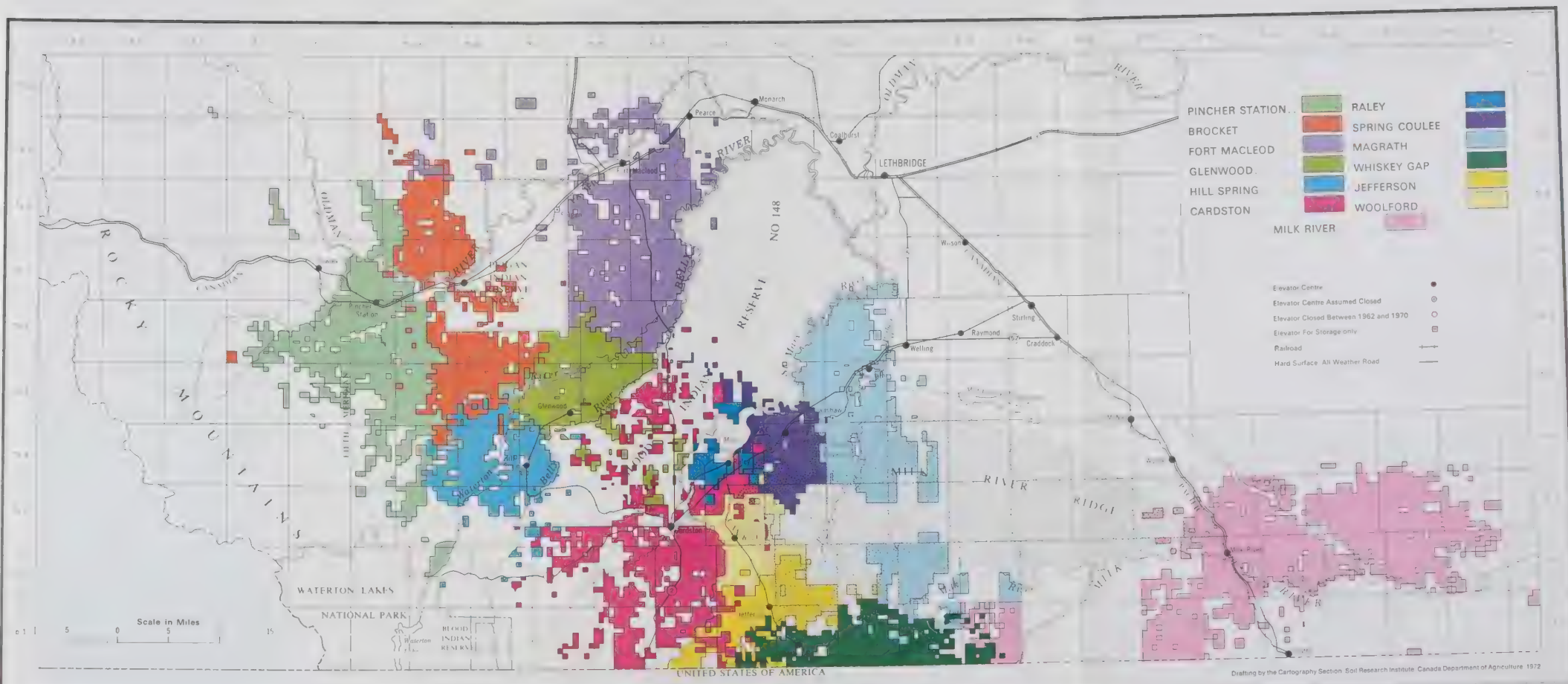


Figure 1. Grain farms in relation to their respective delivery points, Cardston Region, Alberta, 1962-63

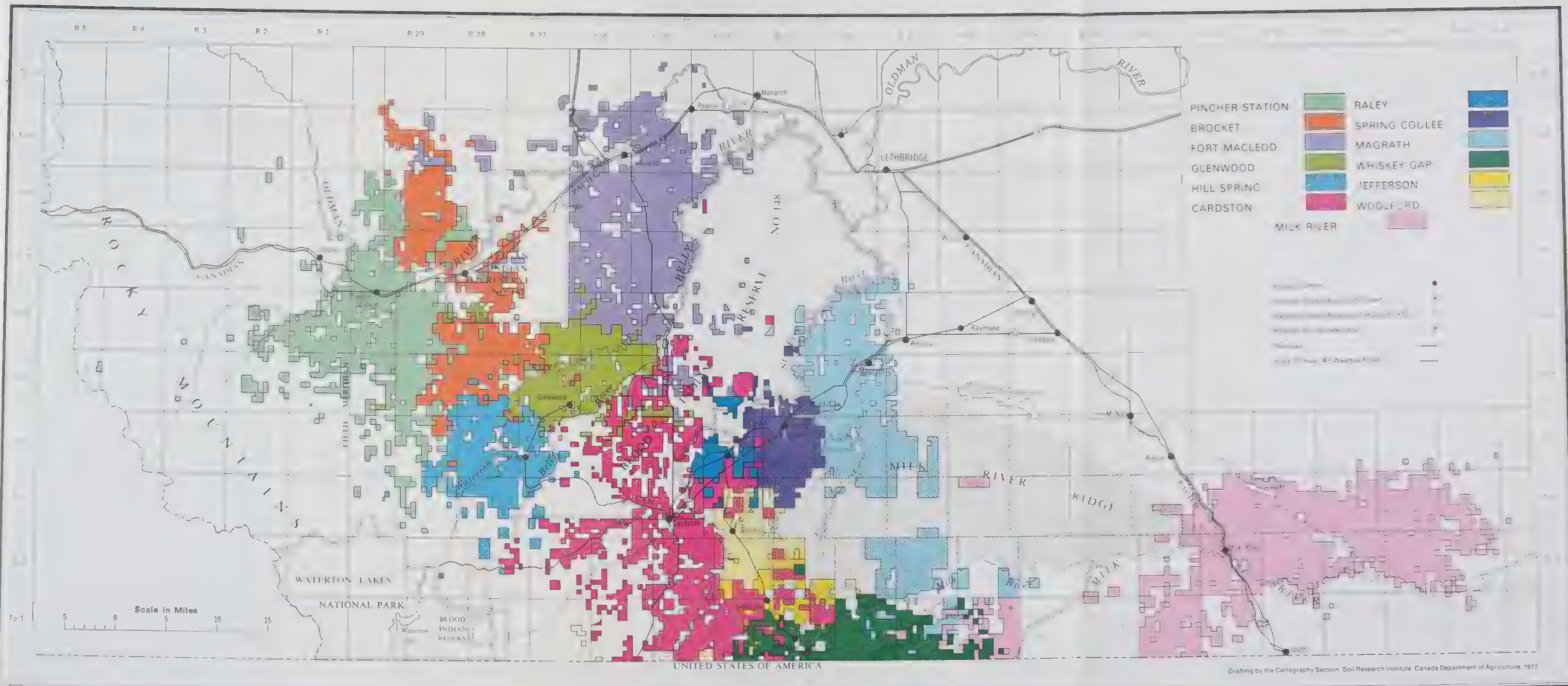


Figure 2. Grain farms in relation to their respective delivery points, Cardston Region, Alberta, 1969-70.

GENERAL DESCRIPTION OF THE LETHBRIDGE
MAP SHEET AREA, B2 H

The Lethbridge map sheet area lies in the southwest corner of Alberta within the Thick Fescue Steppe. The Rocky Mountains in the southwest. Highest elevation approximately 10,000 feet, the Porcupine Hills, elevation 5,600 feet, and the Milk River Ridge, elevation 4,800 feet are the most prominent topographic features of the area. There is no wide range of foothills. The remainder of the area has gently sloping topography with elevations of 2,800 feet in the west to 4,000 feet in the east.

The area is drained by the South Saskatchewan River System with its tributaries, the Oldman, Waterton, Belly, and St. Mary rivers and the Milk River system. Numerous old glacial outwash, Chin, Eskola, and Windgirt channels provide internal drainage.

Fossil roads indicate from Lethbridge in all directions and good secondary roads have been constructed in the farming areas. The area is fairly well serviced by the CNR although some farmers have to drive a considerable distance to deliver their grain.

A major gas field occurs west of Twin Butte. Heavy crude oil is found around Taber. Coal is mined along the Oldman River near Lethbridge. Agriculture, however, is the main industry in the area.

The mixed grain type of range occurs in the southwestern part of the area while the fescue type occurs over the east of the area. Trees are found in the valleys of the rivers and become common above the 4,000-foot contour.

The Pagans and Blood Indian Reserves occupy large areas in this area. These reserves also have Indian limits in the Porcupine Hills and near Waterton Lakes National Park.

CLIMATE

In general, the climate is continental, having warm summers and cold winters. The mean January temperature is 19°F and the mean July temperature is 64.6°F. The mean annual minimum temperature for the year varies from 30° to 34°F, while the annual mean daily temperature varies from 39° to 47°.

The mean frost-free period varies from 126 days around Taber to less than 80 days east to the Rockies. The growing season varies from 190 days at Taber to 145 days or less at higher elevations.

The annual precipitation varies from 13 inches at Taber to over 25 inches near Waterton Lakes National Park. Seventy-five percent of the precipitation falls during the growing season.

Chinook winds reach their greatest frequency in the Macleod-Lethbridge area.

They have the advantage of melting the snow to permit winter grazing, although if not all of the snow is melted cutting occurs making it difficult for stock and wildlife to feed during the winter. These strong winds may be detrimental to crop growth where rainfall is a limiting factor.

MAIN SOIL CHARACTERISTICS

The area has been affected by the Laurentide glaciation and the Cordilleran glaciation. Laurentide glacial events have been traced up to elevation of 4,800 feet in the Waterton Park area and up to 5,600 feet in the Porcupine Hills. Above 4,800 feet in the southwest Cordilleran glacial debris is found. Above 4,800 feet is the Porcupine Hills it is nonglacial. The Milk River Ridge is fairly covered by till or scattered erratics.

Four main soil zones occur. The Brown soil zone lies east of a line along the Milk River, Chin, Waterton, and Chinle. The Dark Brown soils cover the area to a line from the lower slopes of the Porcupine Hills, Milk River, Spring Creek, and Windgirt Gap. The Thin Black and Black zones cover the western portion of the area except for those areas above 5,000 feet in elevation, where Podzolic and Brunisolic soils are found. The Brown, Dark Brown, and Black soils are mostly Chernozemic, Oxylic, Regic, and Solonchak with much up and small portion of the area.

The Chernozemic Browns are in Capability Classes 3 and 4. The Chernozemic Dark Browns and Blacks are in Classes 2 and 3, mainly because of the climatic factor. These soils at elevations above 4,800 feet, regardless of Order, are in Class 5 or 4 depending upon topography.

A sand zone occurs south of Taber with a medium area south of Monarch and around Fort Macleod. These are in Classes 4, 5, and 6. Fine-textured glacial-lauricentric areas occur around Picher Creek, Glenora-Civilville, Magrath, and Cardston. These soils are in Capability Class 2. Large areas of alluvial-lauricentric soils occur between Noholford and Glenora, between Lethbridge and Taber. These soils are in Class 2. The remaining soils are derived from till and are in Class 2 and 3.

AGRICULTURE

Probably the first agricultural enterprise was a dairy farm near Macleod in 1875 to provide dairy products to the Royal North West Mounted Police Post at Fort Macleod. From this the ranching industry grew rapidly south and west. By 1885 the Blood and Pagan Indian Reserves had been established. In 1888 Lethbridge was established and this marked the beginning of the farming settlement in the area. In the early 1900's ranchers were being replaced and from Lethbridge and led to increased settlement.

There is very little abandoned land in the area. Only some of the sandy and generally soils adjacent to Fort Macleod have remained abandoned. They provide only for pasture. Much of the land on the Indian Reserve remains in its native state. Cultivated portions of land occur in the foothills area and Porcupine Hills and the surrounding of the Milk River Ridge. The remainder of this slowly sloping land is used as pasture for cattle. The soil is mostly all cultivated.

Under dryland farming wheat is the principal crop, with oats, barley, rye, and flax being the other important crops grown. Some mustard and rape are now being grown.

IRRIGATION

Two large irrigation districts occur in this area, the St. Mary Milk River Development (SMRD) from Magrath, Raymond, Lethbridge, and Taber, and the Lethbridge Northern Irrigation Development (LNID) from Monarch to Twin. Smaller projects have been built in the United District of Glenora-Civilville, the Mountain View and have been built in Cardston, and the Arden District south of Cardston. Over 280,000 acres are being irrigated at present in this area.

Much of the soils being irrigated are Chernozemic Browns and Dark Browns and Blacks. Very few Solonchak soils are irrigated. The medium-textured soils from Lethbridge to Taber are in Capability Class 1, while the fine-textured soils in Class 2. The area, with an average of over 110 frost-free days, is suitable for growing the more specialized crops such as corn, sugar beets, and vegetables. In the LNID and the Magrath and Raymond areas, grains, forages, and sugar beets are grown. The Arden, Mountain View, Leavitt, and United specialized more in forages, hay, and cereals. The soils in these districts are in Class 2 or 3. Water is not such a limiting factor in the western portion of the area as it is in the Taber area.

Soil conditions have occurred under irrigation in the Magrath, Raymond, and Monarch areas. These are probably being reclaimed.

Large reservoirs for storage of water for irrigation have been built on the St. Mary, Belly, and Waterton rivers. The smaller projects receive their water mostly from stream diversions.

Casualty classification by T. W. Pater based on soil information obtained by the Alberta Soil Survey.

DESCRIPTION OF LA RÉGION CARTOGRAPHÉE
DE LETHBRIDGE, B2 H

La région cartographiée de Lethbridge est située dans le coin sud-ouest de l'Alberta, à l'extrême du nord-ouest par rapport à la province. Ses éléments topographiques les plus marquants sont les montagnes Rocheuses, au sud-ouest, l'altitude la plus élevée, environ 10 000', les collines Porcupine (5 600') et la crête de la rivière Milk (4 800'). On y trouve peu de larges châteaux d'événements. Le reste de la région est caractérisé par une topographie modérément ondulée et l'altitude varie de 2 800' dans l'ouest à 4 000' dans l'est.

Le territoire est drainé par le réseau de la rivière Saskatchewan sud et ses tributaires, les rivières Oldman, Waterton, Belly et Ste-Marie ainsi que le réseau de la rivière Milk. De nombreux écoulements glaciaires anciens, tels que les vallées profondes Chin, Eskola et Windgirt assurent le drainage endorhizique.

Des routes modernes partent de Lethbridge dans toutes les directions et de nombreuses routes secondaires ont été construites dans les régions agricoles. Le territoire est assez bien desservi par le Pacifique-Canadien mais quelques agriculteurs doivent faire de même lorsqu'ils ont une distance considérable pour livrer leurs récoltes.

À l'ouest de Twin Butte il y a un gisement de gaz naturel important; on assure de pétrole lourd autour de Taber et du charbon le long de la rivière Oldman, près de Lethbridge. L'agriculture est cependant le principal industrie. La végétation indigène du nord-est est constituée par la prairie à grandes étendues et la prairie à hautes herbes caractéristique de la région. On trouve des arbres dans les vallées des rivières d'eau et ils sont plus nombreux au-dessus de la couche de rochers de 4 000'.

Les réserves indiennes des Pâganes et des Cheveux-du-Soleil qui occupent de vastes secteurs constituent en outre des centres importants dans les collines Porcupine au près du Parc national des lacs Waterton.

LE CLIMAT

Le climat est continental, caractérisé par des étés chauds et des hivers froids. La température moyenne du janvier est de 19°F, celle du juillet varie de 64 à 68°F. La température minimale moyenne de l'année varie de 30 à 34°F et la température journalière annuelle moyenne de 39 à 47°F. Les températures les plus basses sont enregistrées au haute altitude ou voisinage des montagnes.

La période moyenne sans gelée varie d'environ 126 jours autour de Taber à moins de 80 jours des montagnes Rocheuses. Le début de végétation situe entre 190 jours à Taber et 145 au moins, dans les régions plus élevées.

La précipitation annuelle est de 13 pouces à Taber et de plus de 25 pouces du parc national des lacs Waterton. 75 p. 100 de cette précipitation tombe pendant la saison de végétation.

Les vents chinook qui atteignent leur fréquence maximale dans la région de Macleod et Lethbridge fondent la neige, ce qui permet la pâture pendant l'hiver. Lorsque le neige ne fond pas entièrement, il y a cependant formation d'une couche, de sorte qu'il devient difficile pour les animaux domestiques et sauvages de trouver des aliments. Durant l'hiver, ce vent desséchant peut nuire aux cultures, si ce n'est la possibilité continue de faire la neige.

LES PRINCIPAUX CARACTÉRISTIQUES DES SOLS

La région a subi l'action des glaciations laurentide et Cordillère. On a trouvé des blocs erratiques de la première glaciation à des altitudes atteignant 4 800' dans la région de près Waterton et 5 600' dans les collines Porcupine. Au-delà de 4 800' on trouve des débris de la glaciation Cordillère dans la vallée des collines Porcupine au-delà de 4 800'. Le terrain au-delà de cette altitude des glaciations, la crête de la rivière Milk est recouverte d'une épaisse couche de till et recouvre une grande partie du territoire.

Les sols appartiennent à quatre zones principales. La zone des sols bruns se présente à l'est d'une ligne qui longe la Petite rivière Bow et passe par Chin, Monarch et Cardston. La zone des sols bruns s'étend à l'est d'une ligne qui se situe entre les collines Porcupine et passe par Milk River, Spring Creek, Chinle et Windgirt Gap. Les sols bruns sont au nord-ouest de la limite à l'exception des étendues situées à plus de 5 000' d'altitude, où l'on rencontre des sols podzoliques et brunifiés. Les sols bruns, brun foncé et noirs sont généralement des sols chernozémiques. Les sols glycoliques, régniques et solonchaks forment une petite partie du territoire.

Les sols chernozémiques bruns entrent dans les classes 3 et 4. Les sols bruns, foncé et noirs chernozémiques dans les classes 2 et 3 sont à l'ouest de l'altitude climatique. A des altitudes supérieures à 4 800', ces sols, qui sont l'ordre inverse de l'altitude, entrent dans la classe 5 ou 4 avant le relief.

On trouve une bande solenne au nord de Taber et une autre, de moindre importance, au sud de Monarch et autour de Fort Macleod, elles entrent dans les classes 4, 5, 6. Des étendues glaciaires s'étendent à l'est, autour de Picher Creek, Glenora-Civilville, Magrath et Cardston dans la classe 2. De grandes bandes de sols d'alluvions et de sédiments lacustres situées entre Noholford et Glenora ainsi que entre Lethbridge et Taber sont aussi dans la classe 2. Le reste des sols provient du till et sont dans les classes 2 et 3.

L'AGRICULTURE

La première entreprise agricole de la région a été probablement une exploitation laitière, établie près de Macleod en 1875 pour fournir des produits laitiers au poste de la Commanderie royale de l'ouest, au Fort Macleod. L'élevage se libère au régime agricole seulement au sud et à l'est. En 1885, les réserves indiennes des Cheveux-du-Soleil et des Pâganes furent établies. Lethbridge fut fondée au cours de la même année et cet événement marque le début de la mise en valeur agricole du territoire. Pendant les premières années 1900, on considérait des troupeaux de vaches laitières qui, passant par Lethbridge, facilitaient l'expansion de la colonisation.

Il y a peu de terre abandonnée dans la région. Quelques étendues seulement de sols salins et gypseux près de Fort Macleod sont restées abandonnées car elles ne fournissent qu'une puissance possible. Une grande partie des terres des réserves indiennes reste à l'état vierge. On trouve quelques secteurs cultivés dans la région des monts noirs, dans les collines Porcupine et l'approvisionnement de la crête de la rivière Milk. Le reste de ces terres fortement ondulées sont surtout pour la production des bœufs. Les autres terres sont presque entièrement cultivées, la principale culture étant l'orge et le blé, servant l'industrie. L'orge, le seigle et le lin. On produit aussi un peu de maïs et de colza.

L'IRRIGATION

Le territoire compte deux grands districts d'irrigation, le St. Mary et Milk Rivers Development (SMRD) englobant des rivières Ste-Marie et Milk pour les localités de Magrath, Raymond, Lethbridge et Taber, et le Lethbridge Northern Irrigation Development (LNID), qui dessert Monarch et Twin. De petites entreprises ont aussi été établies. Le district United à Glenora-Civilville, les districts Mountain View et Leavitt à l'ouest de Cardston, et l'Arden au sud de cette dernière localité. Plus de 280 000 acres sont actuellement irriguées dans cette partie du territoire.

La plupart des sols irrigués sont bruns, brun foncé et noirs chernozémiques. On voit très peu d'irrigation en sols solonchaks. Les sols à texture moyenne, entre Lethbridge et Taber entrent dans la classe 1 et ceux à texture fine dans la classe 2. Avec une période moyenne sans gelée de plus de 110 jours, cette région convient aux cultures pédonnelles telles que le maïs, la betterave à sucre et les légumineuses. Dans le Lethbridge Northern Irrigation Development et les régions de Magrath et Raymond, on produit des céréales, des fourrages et de la betterave à sucre. Les districts d'irrigation d'Arden, de Mountain View, Leavitt et United se spécialisent surtout dans la production de fourrages et de céréales. Les sols de cette région entrent dans les classes 2 et 3. L'eau ne constitue pas un élément limitatif dans la partie ouest du territoire avant que dans la région de Taber. Dans les régions irriguées, quelques sols sont restés salins après de Magrath, Raymond et Monarch ou ont été corrigés par cette salinité.

De vastes réservoirs pour l'approvisionnement de l'eau pour l'irrigation ont été construits sur les rivières Ste-Marie, Belly et Waterton. Les petites entreprises utilisent leur eau surtout pour le développement de cours d'eau. Classement des possibilités effectué par T. W. Pater d'après les renseignements fournis par le Service pédonnel de l'Alberta.

